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PREFACE

THIS study is the third in a series devoted to analysis of world food conditions under the impact of the war. It goes to the press at a moment when, to quote from Mr. Herbert Hoover's address in Chicago on May 17th, "hunger hangs over the homes of more than 800,000,000 people—over one-third of the people of the earth."

The study examines in retrospect the evolution of food rationing during the war period as a whole, a review which leads up to an analysis of the present food crisis. It evaluates food consumption levels throughout the world for the current crop-year, surveys the post-war relief situation and reviews public health developments in their relation to rationing and consumption.

The two preceding publications in this series are entitled "Wartime Rationing and Consumption" (published in June 1942) and "Food Rationing and Supply 1943/44" (published in March 1944). Consumption and rationing have also been dealt with in chapters appearing under that heading in the various issues of the "World Economic Survey" published during the war.

The present study is the work of Mr. John Lindberg, main author also of the preceding volumes in the series.

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May 1946*

CHAPTER I

INTRODUCTORY SUMMARY

THE principal facts and conclusions to be found in the present study are briefly summarized in this introductory chapter. The summary follows in the main the line of presentation adopted in the body of the text.

1. FOOD RATIONING SYSTEMS DURING THE SECOND WORLD WAR

1. Food rationing was introduced in most countries of Europe as an early wartime measure before specific scarcities had had time to develop. It was designed to

- a) secure equitable distribution of available supplies of essential foods to all, regardless of income;
- b) prevent waste of essential materials, foreign exchange, shipping space and manpower;
- c) supplement and reinforce such measures of price-and-production controls as were deemed necessary for managing the war economy.

2. Without effective co-ordination between the various phases of the social and economic policy, and more particularly between rationing, procurement of supplies, and price-control, food rationing cannot work smoothly. In comparison with the last war, governments were on the whole remarkably successful in managing rationing. Under the influence of differences in the general economic situation there developed two distinct types of rationing systems, the German and the Anglo-American.

German-Type Rationing

3. The German system represents a development and refinement of rationing as applied during the first world war. This system was adopted, with some modifications, all over the Continent of Europe.

Its construction was essentially determined by a supply situation that was more stringent than in the Anglo-Saxon countries. Imports to the Continent, normally representing about 10% of its food supplies before the war, were entirely cut off, whilst domestic crop production contracted to approximately 80% of normal by the end of the war. The problem facing the Continent was that of maintaining human food consumption in a manner satisfying nutritional requirements so far as possible, in spite of the drastic reduction in total food supply. The solution of this problem was sought essentially in reduction of livestock numbers (chiefly pigs and poultry) and transfer to direct human consumption of the feed crops so released. This policy obviously resulted in a lowering of the animal-vegetable ratio—*i.e.*, in raising the proportion of vegetable calories—in the human diet.

4. With regard to the nutritive value of the diet, it is important, however, not to reduce the proportion of animal calories more than is absolutely necessary: milk in particular is essential to the healthy development of children. Hence, economy is required in the distribution not only of animal, but also of vegetable foods. Under the German system all important single foodstuffs or groups of kindred foodstuffs, were specifically rationed at so much per person per week or per month. Rationing determined both the quantity and the quality of diets, for the free foods (game, certain vegetables, fruit, etc.) were either too expensive or too low in specific calorie content to affect the total food intake in any significant degree.

5. But physiological needs for food vary with sex, age, occupation, etc.; therefore, in order to avoid inequalities in terms of need, rationing had to be made differential. Consumers were divided into broad categories in which each received rations in proportion to alleged needs. For practical administrative reasons, however, the categories had to be limited in number, and whilst differentiation mitigated the inequalities (in terms of need) inherent in any system of specific rationing, it did not eradicate them. The system remained cumbersome, inelastic and altogether devoid—at least in theory—of a free consumer's choice.

6. Rationing to be successful requires a highly efficient administrative apparatus and also the support of public opinion. Where these fundamentals are missing—especially as regards the procurement of food from the farmers—an ever increasing proportion of total food supplies finds its way into the black markets. The lower the official rations become, the greater becomes the incentive to use and supply

these markets, and the more readily does public opinion condone their use. Once rations fall below what is required to maintain a reasonably adequate diet, black markets are bound to expand.

7. The efficiency of rationing anywhere in Europe was almost directly proportionate to the calorie level that the rations afforded. The higher the rations, the less important was the black market, and vice versa. Rationing proved efficient on the whole throughout the war in Germany, Czechoslovakia, Denmark, Sweden and Switzerland, and most of the time also in the Netherlands; it was less successful in Belgium, France and Norway. In southern and eastern Europe it ultimately broke down altogether. But the more defective the rationing system, the less indicative of actual consumption are the legal rations. Only under conditions of extreme scarcity (as in Greece in 1943) have black-market supplies dried up.

Rationing of the Anglo-American Type

8. In the United Kingdom, whose access to oversea supplies, though seriously threatened, was never sealed off during the war, rationing was introduced chiefly in order to husband scarce shipping space and foreign exchange. Domestic output was directed towards production of bulky or perishable foods (wheat, vegetables and milk), whilst food imports were primarily directed towards providing for concentrated animal products (fats, meat and dairy products). During no period of the war, however, was there an absolute limitation of the supply of total calories. Consumption of bread and most vegetables remained free—serving as “budget regulators” permitting all consumers to purchase as many calories as they required—and rationing was designed to distribute equitably scarce foods (animal products, sugar and fats). It was so constructed as to supply average needs of all the main nutritive elements. There was no need for a differential calorie rationing on the continental pattern; basic rations were on an equal *per caput* basis.

9. Special needs of various groups of consumers for quality foods were met by special distribution schemes, superimposed, as it were, on the basic rationing system. Among these were special rations of milk and other protective foods for children, nursing and expectant mothers; communal feeding, industrial canteens and “British Restaurants.” In addition, desirable but not essential additions to the rations were supplied by the “point-rationing” system, which permitted a rather wide consumer’s choice between different commod-

ties. In all, therefore, the British system remained throughout the war more elastic than the German system and better adjusted to individual needs.

10. The supply situation in the Americas and the British Commonwealth outside the United Kingdom remained less strained than in Great Britain. Rationing could on the whole be limited to animal foodstuffs, so as to prevent an uneconomic expansion of animal production while providing for a sufficient margin of such foods for export, lend-lease and military needs. In the United States the British "point system" was further developed, the main foods—fats and meat on the one hand and canned goods on the other—being rationed on a separate point basis. Little restriction of a free consumer's choice was involved.

Food Distribution Measures in the East

11. In the undeveloped economies of Africa and Asia it was not generally possible to ration foods on the western patterns. When food regulations proved inevitable they generally assumed the form of allocations of staple foods, mainly cereals, to entire villages, communities or tribes. Individual rationing of cereals in urban centres was introduced in some areas, however, notably in India, Palestine and North Africa.

2. FOOD CONSUMPTION LEVELS DURING THE WAR

12. A food consumption that was adequate in calories and qualitatively as satisfactory on the whole as before the war was maintained in the Americas, the British Dominions, the United Kingdom, Ireland, Denmark, Sweden and Switzerland. In Bulgaria, Roumania and Hungary the pre-war intake of food, which though probably adequate in calories, was of lower nutritional quality than in the countries just mentioned, seems to have been approximately maintained during most of the war period. Such critical shortages as arose locally in the rest of Europe were confined in the main to urban areas and affected especially those population groups in the towns too poor to frequent the black markets. Farmers as a class were little affected by food rationing and were apparently able to maintain pre-war consumption levels except in areas directly exposed to warfare.

13. In Germany and the Protectorate of Bohemia and Moravia the calorie levels of urban consumption were slightly lower on the

whole than before the war, though not much short of 3000 calories daily per consumption unit. In Belgium, Finland, the Netherlands and Norway, rations varied between approximately 2300-2800 calories *per consumption unit* a day; rations *per caput* or per "normal consumer," of course, were lower. These figures, although in some cases as much as 20% lower than before the war, do not indicate a truly critical deficiency of calories; but at times local shortages may have been more severe. Levels of roughly 1500-2300 calories per consumption unit were found in the Baltic States, Slovakia, France and Italy, although it is necessary to take into account substantial additions from the black market, particularly in France and Italy. Where such additions were not forthcoming we find pockets of food intake too low to permit of full working capacity and health. In Poland, Greece, parts of Yugoslavia and Albania distribution was irregular and consumption fell for shorter or longer periods to levels of semi-starvation or outright famine.

14. Throughout Europe the proportion of food of animal origin, particularly of meat and eggs, was decreased, though milk consumption was relatively well maintained. Fats were generally scarce, whilst consumption of vegetables mostly increased, both relatively and absolutely. On the whole the nutritional composition of the diet, especially as regards vitamins and minerals, was not much worse than before the war; indeed, in some cases it even improved. Absolute deficiencies of particular nutritive elements arose as the calorie intake decreased below safe levels. Insufficiency of calories became synonymous with malnutrition as well.

15. Calorie rations in the U.S.S.R. appear to have been nearly as high as in Germany (about 1800 calories per head per day), but the diet included almost no milk, milk products, fats or eggs, and only a little meat. Serious local, temporary shortages arose in the low-consumption areas in the Far East. Parts of India suffered a famine in 1943; famine has also visited various parts of China. In Japan, where rations were lowered during the course of the war period, a serious food situation developed at the end of the Pacific war.

3. THE POST-WAR FOOD CRISIS

16. The food situation worsened markedly over wide areas towards the end of the war and subsequently continued to deteriorate at an accelerated pace until, in the spring of 1946, famine conditions prevailed in parts of Europe and the Far East. The intensity of the

present crisis is due in part to adverse natural factors such as droughts, and to the upheavals of the closing phases of battle, but fundamentally it reflects the dangerous unbalance that has developed in the world's agriculture.

17. During the war world food production per head—according to the most authoritative estimates available—declined by about 12%, a much heavier decrease in Continental Europe and the Far East being but partially offset by a substantial increase in North America, as well as in the British Isles. In the circumstances it would have been necessary, in order to maintain the calorie consumption of the world's population at a reasonably adequate level, to increase the supply of cereals for human consumption by reducing livestock numbers, not only in Europe (where a substantial reduction to that effect was in fact brought about during the war), but also in the other parts of the world, particularly the countries producing a surplus of cereals, where such reduction can be readily effected. Most of these countries, however, increased the feeding of cereals to their livestock population, in some cases substantially increasing their number during the war. Moreover, on the termination of the fighting in Europe, these countries generally liberalized or abolished rationing. In consequence it proved impossible for important food-exporting countries to meet more than a part of the import requirements of deficit areas.

18. In spite of belated efforts to meet these requirements, it is, at the moment of writing, clear that famine cannot altogether be averted. The Emergency Committee for Europe has estimated that approximately 100 million people in Europe will receive less than 1500 calories a day, and of these many, particularly in Germany, Austria and Hungary, are already receiving 1000 or less. In India the cereal crop is short by about 8 million tons, and a large part of the city population is existing on rations of 1000 calories a day or less. With recent allocations of wheat it is possible that further widespread deterioration will be avoided. In China acute local famines are reported, but transport obstacles make adequate relief extremely difficult. In Japan as well famine conditions will develop unless large imports materialize.

4. RELIEF ACTIVITIES

19. International food relief to the liberated areas has been severely hit by the food crisis. UNRRA began large-scale activities in

April 1945, and had by the end of February 1946 shipped 3.8 million tons of food to twelve nations. Greece had received 1.3 million tons of this total, seven east-European countries together 1.8 million tons, and all others 0.7 million tons. Food relief after the first world war, when the needs were smaller, amounted to 6.2 million tons, of which not less than 4.8 million were shipped during the period January to August 1919. At the moment of writing actual deliveries continue to fall short of scheduled operations.

5. PUBLIC HEALTH

20. The health situation in the Americas, the British Commonwealth of Nations, Sweden, Switzerland and Denmark continued on the whole to improve, despite the war. In the Netherlands, Norway and Czechoslovakia and, during part of the period, Finland, serious deterioration was averted. In Germany, France and Italy the situation was more unfavourable, and decided increases in mortality are to be noted. Conditions in Bulgaria, Hungary and Roumania did not seem to have deteriorated in any decisive manner, but such information as is available for Poland, Yugoslavia and Greece shows a grave impairment of health and increased mortality. The conclusion of hostilities appears to have been followed by a certain improvement in western Europe and by a drastic retrogression in Germany, Italy, Austria, Hungary, Roumania and Japan.

21. The world health situation as a whole—except for the special areas mentioned above—has remained better than could *a priori* have been expected. This is due largely to the absence, so far, of serious epidemics of the type occurring after the first world war, but also, no doubt, to the relative success of the food distribution schemes described above. It should be emphasized, however, that the full effects of malnutrition, starvation and privations take a relatively long time to make themselves felt. A complete evaluation of the war's impact on health has, therefore, to await more ample information than is as yet available.

CHAPTER II

FOOD RATIONING AND CONSUMPTION DURING THE WAR

THE purpose of this chapter is to describe in general outline food consumption during the war. However, in the absence in most cases of direct statistics of total food consumption, it is necessary to rely largely upon official data on individual food rations. During the latter part of the war and the first months of liberation in Europe, organized food distribution frequently broke down; therefore it has been found necessary to deal separately with the war period proper and the transitional period from war to peace.

The statistical material pertaining to rationing is reproduced by countries in Appendix I. In most cases the material is supplied directly by governments or taken from official sources. In a few cases it has been necessary to have recourse to non-official sources of varying value. Every effort has been made to present the rationing data in as comparable a form as possible. Foodstuffs have been arranged in eleven groups constructed generally on the basis of nutritional affinity, though rationing regulations are such as to have necessitated in some cases the combining of foods which are not always homogeneous. The data are given in grammes per week; actual rationing periods vary in length—the most common period being the week or month. Unless otherwise stated the month is supposed to correspond to 4.3 weeks; in some cases, however, the length of the rationing period has varied irregularly and it is possible that certain changes of this nature have been overlooked. Flour is expressed in terms of bread. An attempt has been made to include for each country as many consumer categories as possible. These are self-explanatory with the exception of the "normal consumer," which differs not only from country to country but also among different food items. It is assumed that "normal consumer" includes all consumers unless otherwise stated. Figures are given for each quarter; in general they relate to the middle of the period, but in some cases they are aver-

ages. In a few cases approximate data have had to be used.

Although every effort has been made to check the figures used, they are largely provisional in nature and hence subject to ultimate correction. Only when adequate national studies have appeared can the final history of food rationing and consumption during the war be written.¹ Meanwhile, this survey supplies a first outline of consumption developments.

The rationing tables should be used with circumspection. Data relate to *legal* rations. These may or may not have been actually available in the shops. In a broad way rationing coupons seem to have been honoured in North America, Great Britain, the British Dominions, Sweden, Switzerland and Denmark. The same seems to hold true, with only minor exceptions, for Germany up to the early spring of 1945. In the former German-dominated areas irregularities were the rule. In particular, rations of animal foods were often not available in full. But the smaller or the less obtainable the legal rations, the more the black markets tend to grow in importance; for as foods become scarce, the incentive both to supply them and to use them increases, while the deterrent effects of punishment and the disapproval of the public become weaker. It is difficult to give any precise quantitative measure of the provisions being supplied through the black markets. In some countries and for some commodities the black-market proportion is believed to have been as high as a third of the total supplies. Having regard to all factors, one is perhaps justified in assuming that actual consumption tended to be higher rather than lower than the level indicated by legal rations.

It should be remembered also that rationing in fact applied to urban populations. Farmers cannot for good reasons be strictly rationed, and in spite of requisitioning of agricultural products, the allotments of quota to be delivered, special inducement payments, prohibition of home slaughter and the like, the farmers were able to maintain their consumption very much at its normal level. This explains why rations for the urban groups are smaller than an allocation of total supplies *per caput* of population would indicate. The greatest reduction fell naturally on the industrial workers, too poor to patronize the high-cost black markets.

During the course of the war the quality of food deteriorated. The

¹ As a pattern for future studies of this kind one should mention the studies by the Special Joint Committee of the Combined Food Board (quoted below) on "Food Consumption Levels in the United States, Canada and the United Kingdom."

milling percentage of grain was increased from an average of little more than 70% to 85/90% or even more. Admixtures of potatoes, barley and so on were added to bread. The fat content of meat, milk and cheese was decreased. While whole wheat bread is nutritionally preferable to white bread, most other changes tended to decrease both the calorie content and the quality of foods. It is not possible to take such changes into account in this study; a loaf of bread appears throughout as a loaf of bread, and a pound of meat as a pound of meat.

In undertaking studies of food consumption, it is not the size of particular rations that primarily interests us. We need to compute the value of the diet as a whole with respect to its content of calories and other nutritive elements. Now, in computing and comparing levels of consumption, different measures can legitimately be used, giving considerably different results. Much confusion has been caused by the indiscriminate use of different measures, and it is useful to preface this chapter with a short description of these methods.

The most complete, and in theory the most satisfactory measure of food consumption, is the *per caput* quantity of various commodities consumed during a certain period of time, generally the calendar or crop year. This figure is obtained by dividing the supply available for consumption (production \pm changes in stocks, + imports, - exports, seed, feed, industrial consumption, spoilage, waste, etc.) by the average number of consumers during the period. The figures represent, as it were, the national food balance. In practice, however, relatively few countries possess the statistics necessary to compute a total food balance, and even where available, the exact calculation of the many deductions mentioned above is difficult if not impossible. They remain, therefore, rather in the nature of approximations of actual consumption, tending on the whole to overestimate it. The national food balance figures can be somewhat refined by being expressed not *per caput* but per consumption unit of the population. The need of individuals for food varies with age, sex and occupation, and the consumption unit is a more uniform measure of needs than the individual. As women and children, with their smaller needs, are counted in terms of an "adult male," the number of consumption units in a population is smaller than the number of heads; hence, the *per caput* figures of consumption are lower than the consumption unit figures, generally by some 25 per cent.

If all foods were rationed on an equal *per caput* basis, rationing figures would correspond exactly to the food balance figures, pro-

vided the latter represented foods as purchased, *i.e.* if they took full account of all diversions of food on the way from the producer to the consumer. In actual fact this is not the case and the ration figures tend to be somewhat lower than the food balance figures. Moreover, food is not distributed equally over the population, tending still further to increase the difference between the two sets of figures. First, the agricultural population is, as has been pointed out, not strictly rationed, but maintains on the whole its normal consumption level. When the total food supply decreases, this implies a proportionately greater contraction of the consumption of the urban population. Rationing figures do not represent an over-all picture, but show developments in the so-called critical area of consumption—above all that of industrial workers in the big cities. Secondly, even within this area, rationing is not on an equal *per caput* basis. Different consumer categories receive different rations according to assumed physiological needs. If comparable *per caput* figures were desired, it would be necessary to calculate special averages of the consumption of the various consumer categories, but in the absence generally of figures showing their numerical strength, such averages cannot be constructed.

Nevertheless, in order to arrive at a representative picture of the conditions within the rationed population, two complementary methods have been employed in these studies in the past. The first is to consider the consumption of the greatest, most representative consumption group—that of “normal consumers.” Certain groups (children) have lower rations than normal consumers; others (heavy and very heavy workers, soldiers, etc.) have higher rations. If the excess and deficit balanced each other, the normal consumer figures would represent the average consumption of the rationed groups. In reality, partial information suggests that the children’s rations are not sufficiently lower than the normal consumer’s rations to compensate for the extra rations of heavy workers,¹ hence, the normal consumers’ rations tend to underestimate average consumption even of the groups subject to rationing. But even so they are sufficiently representative to permit of certain comparisons both as regards relative size of rations in different countries, and as regards developments over a period of time in one and the same country. The second method is to compute consumption figures for a typical family comprising representatives of different consumer categories; this family can then be converted into consumption units and consumption ex-

¹ Cf. “Food Rationing and Supply 1943/44,” pages 30-32.

pressed in quantities (or calories) on the basis of this uniform unit. These figures are more representative and allow certain general conclusions as to the physiological adequacy of different national diets.¹ Hereafter both methods will be utilized.

The original rationing data are expressed in grammes or pounds; in order, however, to arrive at a comparable measure, these figures are usually converted into calories. This practice is now so common that little defence is needed. A warning should rather be given against the tendency of overestimating the significance of such figures: they express simply the energy value of different foods, and are, like grammes or pounds, nothing more than a convenient yard-stick. The nutritive value of a calorie of food depends on the nature and quality of that food, and it is no less important to keep apart the nutritive value of a calorie of food than of a gramme or a pound of food.

Moreover, conversion of food into calories in a broad survey of this nature must be fairly summary. The calorie figures given here have, when not otherwise stated, been calculated according to a uniform scale.² This procedure is open to objections in several re-

¹ The relationship between these different kinds of estimates may be illustrated by means of a simple numerical example. Assume a country having equal numbers of people in agricultural and non-agricultural occupations. Assume that the national food balance permits a consumption of 3000 calories a day *per caput*, and that full account is taken of waste, etc. The consumption among farmers, however, is 4000 calories a day, and among non-farmers 2000 a day. Assume also that "normal consumers" receive a ration of 1800 calories a day (children somewhat less and workers somewhat more). It is supposed that the number of consumption units (adult male equivalents) is 75% of population numbers. We arrive then at the following relationships:

	<i>Calories per Day</i>	
	<i>Per Caput</i>	<i>Per Consumption Unit</i>
National Food Balance	3000	4000
Farmers	4000	5333
Non-farmers:		
"Normal Consumers"		
Male	1800	1800
Female	1800	2020
Average	1800	1910
Family Consumption (all categories)	2000	2667

It is easy to see that confusion results if these different measures are indiscriminately compared with physiological requirements which for a population as a whole is generally expressed in terms of calories *per diem* per consumption unit (not *per caput*).

² Standard calorie tables give exact values for precisely defined foods. But it is a question here of converting not individual foods, but broad food groups, and of using some average of the calorie content in each group. The composition of food

spects. It is impossible to take into account many qualitative differences in food, and the calculations are subject to a considerable margin of error: they should be considered in the nature of rough approximations.

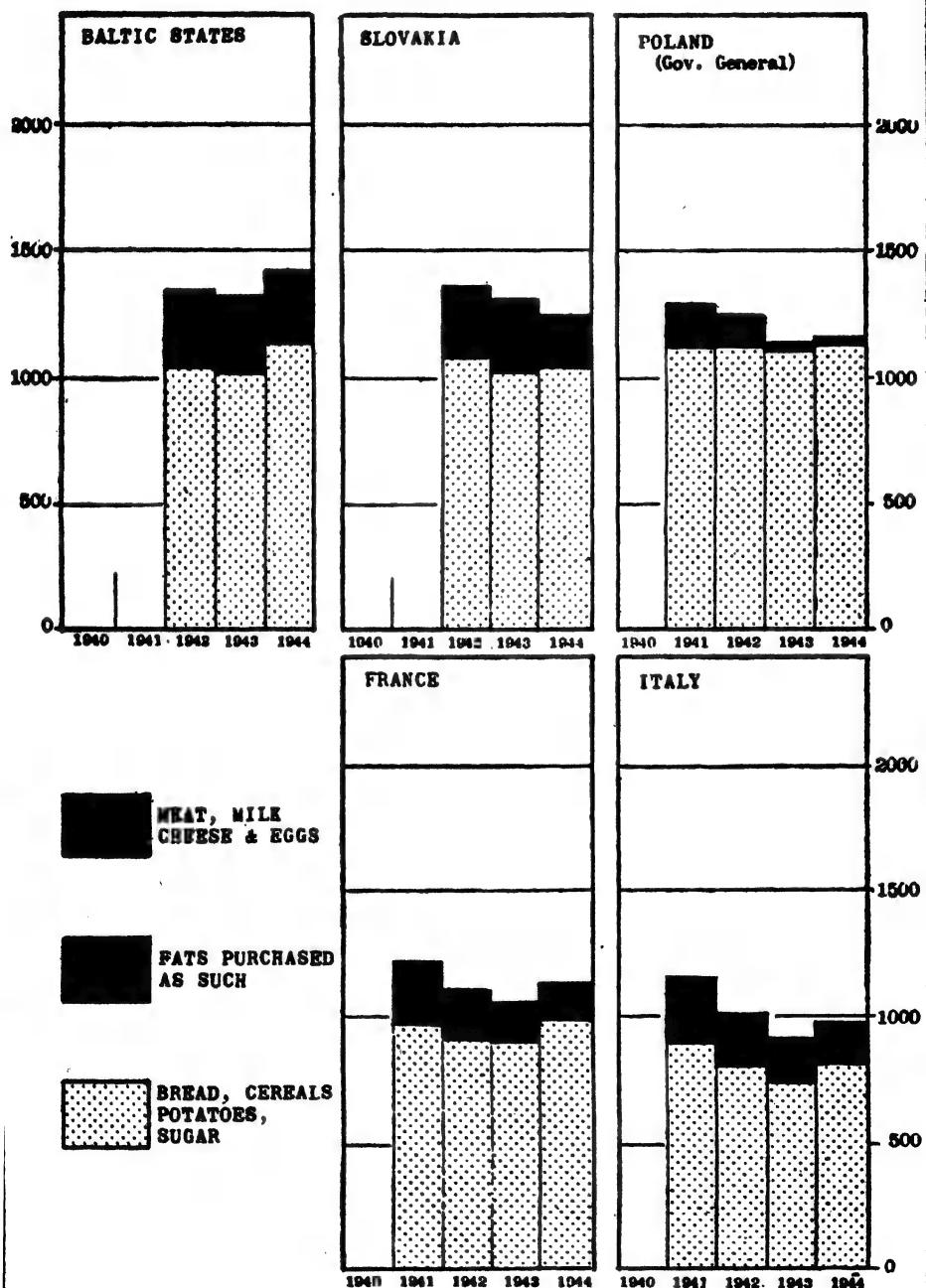
In estimating total calorie intake, it is important to take into account not only rationed but also unrationed foods. Total demand for calories is much less elastic than demand for particular foods. If, for instance, fats and meats are rationed but bread remains free, experience shows that the demand for bread increases, leaving the demand for total calories practically the same as before rationing. As long, then, as some of the great staple foods remain free, total calorie intake is also free; rationing affects the composition (and the nutritive competency) of the diet but not total calorie intake: in such a case rationing is called *partial*. But if all the great staple foods (regularly supplying some 95% of total calories) are rationed, it is impossible to make up for decreased quantities of rationed foods by consuming more of the unrationed. Not only are such foods (fruit, certain vegetables, game, etc.) expensive per calorie, but total supplies are too small to affect greatly the total food balance. When all the chief staple foods are rationed, rationing is here termed *total*.

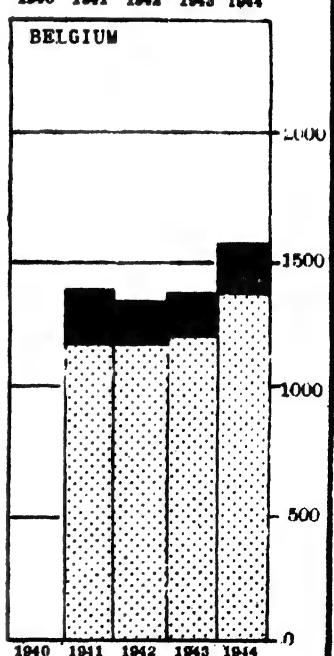
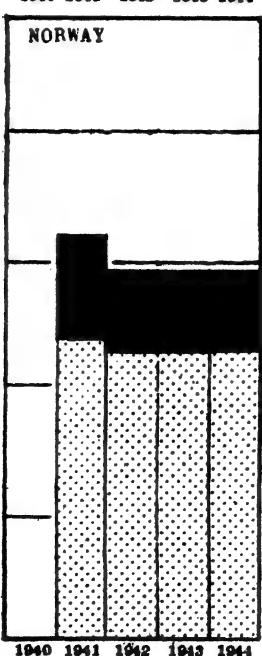
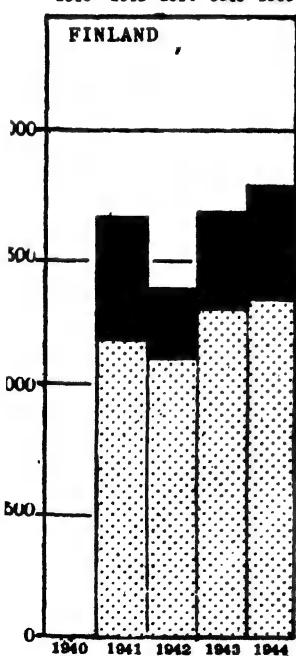
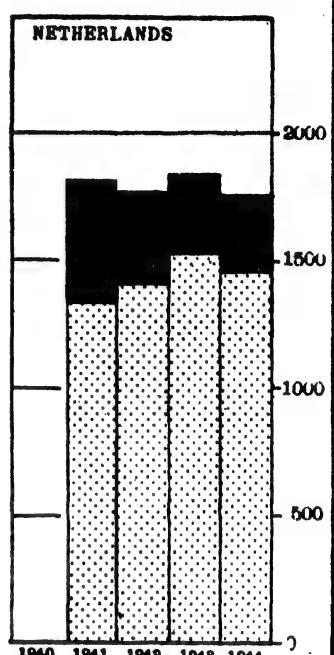
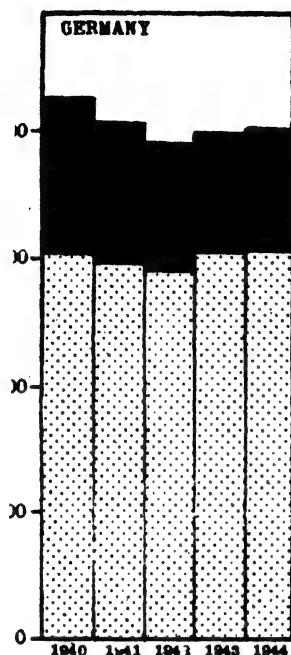
For a number of reasons—the chief being the difficulty of constructing and administering a system of differential rationing—countries have tried to maintain the flexibility of the food distribution system by excepting one or more staple foods from rationing in so far as the supply situation permitted of such exception. The most important of the budget regulators is bread; but its function has also been taken by potatoes, and in some cases by milk and potatoes. Hereafter, then, a distinction will be made in so far as possible between countries which have been obliged to adopt total rationing and countries the supply situation of which has permitted them to adopt a partial rationing. It should be remembered, however, that as the war progressed, the supply situation generally became tighter, and countries like Germany, which had initially left potatoes as the budget regulator, had later to ration them and change from partial

groups, however, differs between countries, and from time to time in the same country. Certain attempts have been made to account for important differences in national consumption habits, but it has been impossible or impractical to account for a number of such differences.

The figures below show the factors of conversion used to convert 1000 grammes of a food group into calories (net). Bread (1 kg of flour or hard bread = 1.3 kg of ordinary bread) 2600; cereals 3500 (Italy 3800); sugar (jam calculated on the basis of 50% sugar content) 3800; potatoes 800; meat and meat products 2600 (bacon 4500); fats 7500; milk 650; cheese 3000; eggs 75 each.

DIAGRAM I
AVERAGE DAILY RATIONS OF NORMAL CONSUMERS IN
CALORIES DURING THE PERIOD 1940-1944





to total rationing. In such borderline cases the countries have been grouped with those having total rationing.

Owing to the difference in the supply situation, the methods of rationing adopted and the character of the statistical data, it is useful to consider separately the following broad groups of countries: (I) Germany, German-dominated Europe, Finland and Italy, (II) the U.S.S.R., (III) the United Kingdom and the European neutrals and (IV) the rest of the world.

1. GERMANY, GERMAN-DOMINATED EUROPE, FINLAND AND ITALY

A. Countries in which Rationing was Total

Normal consumer rations. Diagram I shows the daily calorie rations of normal consumers of different foodstuffs, and total rations in countries where rationing can be considered as total.

Bread, cereals and potatoes. The bulk of the body's energy requirements is ordinarily supplied in the western world by bread, cereals in other forms and potatoes. These starchy foods are within wide limits interchangeable. Their dominating place in the diet is explained by their cheapness; bread has the further advantage of being a relatively condensed food and, especially if made of whole wheat flour, is also a valuable source of vegetable proteins and minerals. But generally bread consumption falls as income rises, and is higher in poor than in rich countries. In fact, it is these foods generally that tend to maintain the calorie equilibrium of the average diet, compensating for lower consumption of higher quality foods, and hence serving as budget regulators.

The Continent of Europe is not ordinarily self-supporting in cereals; about 10% of the total supply is imported. At the outbreak of war imports were cut off, though for a while it was possible to draw on reserve stocks which had been accumulated in preparing for the contingency of war. But considerable changes in food policy became necessary; most countries while succeeding in the maintenance of total calorie levels of a sufficient height, came to depend more and more on vegetable foods, which are more economical in terms of land and labour than animal foods. This, of course, implied a cutting down of animal production and consumption, in particular of pigs, poultry and eggs. Hence as the war progressed the diet came to be composed more and more of cereals and potatoes and less of animal foods. But owing to the importance of maintaining milk and fat production, cereals had at the same time to be strictly husbanded.

It is easy to understand then that the size of bread rations by themselves means relatively little. If the total calorie intake was to be maintained the bread (and potato) consumption should have been increased just enough to compensate for the decreased consumption of animal foods and fats; and bread rations at or even slightly above the pre-war level might mean an actual decrease in total consumption. In the same way comparisons of bread rations in different countries are apt to be misleading unless the other components of the diet are simultaneously taken into account. Countries like Sweden, having relatively low bread rations, might have a satisfactory total calorie intake whilst countries with much higher bread rations might be at critically low levels of intake. A general picture of the development of bread and potato rations is given in Table I. Pre-war consumption figures per head not, however, strictly comparable, have been added.

Sugar. It should be remembered that unlike bread sugar is not an essential foodstuff; it is, however, a highly concentrated source of calories, and is to a large extent used as a condiment in combination with other foods of greater nutritive value, such as fruit. The return of calories per acre of sugar beet is remarkably high, but cultivation requires a considerable outlay of labour. Hence, as is to be expected, the variation in sugar rations is great, just as before the war its consumption varied greatly according to income. Rations were well maintained and even increased during the war, but were on the whole considerably lower than pre-war consumption. The rations in France and Italy were particularly low.

Meat and meat products. In spite of the great importance of meat in national diets, it is difficult to obtain reliable measures of both pre-war and war consumption. This group includes a great many different products of different quality and origin, quantities as purchased contain different proportions of fat, bone, waste, etc., and any estimate of total intake remains extremely hazardous. On the whole, however, it may be taken for granted that the quality of meat deteriorated during the war, quantities as purchased containing a larger proportion of waste and bones and less fat. Moreover, as already noted, the legal rations of meats were often unobtainable in the shops in the occupied countries. Meat rations generally, as opposed to bread rations, were not only below peacetime consumption levels, but continued falling throughout the war. In some countries, particularly in eastern and southern Europe, meat gradually disappeared from the ordinary diet. Denmark alone was able to avoid

rationing. The scarcity of meat was felt the more acutely since the supply of fish decreased radically because of the war. Only in Denmark and Norway, of the countries here considered, did fish remain an important item in the diet, though in the latter country the catches

TABLE I

PRE-WAR PER CAPUT CONSUMPTION AND NORMAL CONSUMER RATIONS
OF CEREALS AND POTATOES 1940-44

(calories per head per day)

Country	1933/37		1940	1941		
	Wheat flour Disappearance	Cereal Potato Con- sumption	Bread Cereal Rations	Bread Cereal Rations	Potato Rations	Total
Germany	400	1370	925	895	—	—
Belgium	960	1680	—	600 (i, II)	400 (II)	1000
Poland (Gov't. General)	430	2150	—	665	500 (II, IV)	1165
Netherlands	860	1620	835	900	305	1205
Norway	530	1340	—	725	—	—
Czechoslovakia (Protectorate)	670	1710	1180	950	340 (IV)	1290
France	1220	1650	795	740	115 (i)	880
Italy	1180	1800	—	770 (IV)	40 (IV)	810
Scandinavia inland	380	1330	920 (III, IV)	740	—	—
Scandinavia alitic States	—	—	—	—	—	—

SOURCE: Pre-war data: "Wheat Studies".

of the more valuable fish were largely reserved for German consumption.

Fats. In Western diets, from one-quarter to one-third of total calories is generally provided in the form of fat. It should be remembered, however, that a large part of this fat is contained in such foods as milk, cheese, meat, nuts, etc., and that only a part is fat purchased as such. It has been impossible to obtain figures for this

study of total fat consumption during the war; the figures here relate only to fats purchased as such.¹

From the point of view of nutrition, fats assume a position apart from most other foods; they are in theory interchangeable with carbohydrates, though some seem to be needed to prevent a deficiency of fat-soluble vitamins (A and D). In the type of economy that prevailed in Europe before the war, the supply of animal fat was dependent to a great extent on direct imports or on the import of

TABLE I (*Continued*)

1942			1943			1944		
Bread Cereal Rations	Potato Rations	Total	Bread Cereal Rations	Potato Rations	Total	Bread Cereal Rations	Potato Rations	Total
865	400	1265	935	400	1335	955	400	1355
610	400	1010	625	400	1025	790	400	1190
640	340	980	805 (rv)	220 (rv)	1025	820	230	1050
865	370	1235	870	455	1325	885	405	1290
675	340 (rv)	1015	675	340	1015	675	340	1015
910	355	1265	955	345	1300	955	270	1225
740	110	850	740	110	925	815	110	925
675	75	750	565	60	625	755	30	785
700	—	—	815	—	—	835	—	—
680	—	—	705	230	935	800	230	1030

feeding stuffs for animals. In addition, vegetable fats were mainly imported from overseas. Hence the blockade severely curtailed supplies, and since the increased cultivation of plants furnishing oil was unable to compensate for the deficiency created, fats early became the most generally and most severely rationed of any of the chief food groups.

¹ The calorie totals given in this chapter, however, are naturally inclusive of the indirect supply of fat.

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Italy	1180	1800	—	770 (iv)	40 (iv)	810
Finland	380	1330	920 (iii, iv)	740	—	—
Baltic States	—	—	—	—	—	—

SOURCE: Pre-war data: "Wheat Studies".

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910	355	1265	955	345	1300	955	270	1225
740	110	850	740	110	925	815	110	925
675	75	750	565	60	625	755	30	785
700	—	—	815	—	—	835	—	—
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¹ The calorie totals given in this chapter, however, are naturally inclusive of the indirect supply of fat.

Milk. Nutritional research has emphasized the unique value of milk in the diet, and great efforts were made to maintain milk consumption at the highest possible level; whilst egg and meat production were severely curtailed, milk production remained on a relatively high level. This policy was so much the more natural, as a given quantity of feeding stuffs returns a greater number of calories in the form of milk than in the form of almost any other animal product. Milk rationing was as a rule highly "differential," the milk being reserved mainly if not exclusively for children, nursing or expectant mothers and invalids; in most countries the rations of normal consumers were nil.

Cheese. As a greater proportion of the available milk was consumed in liquid form and every effort was made to maintain butter production, the supply of cheese fell greatly and its fat content was universally reduced. Rations amounted to only a fraction of pre-war consumption.

Eggs. Eggs are expensive in terms of feeding stuffs and production was most drastically reduced. Thus in Germany, rations in 1942 were but a sixth of pre-war consumption, and in most occupied countries were even lower.

Coffee, tea, cocoa, etc. Since imports from overseas were practically cut off by the blockade, rations were small and finally ceased altogether. Most countries, however, provided for rations of substitute coffee.

Total rations. As considerable emphasis has of late been given to data for normal consumer rations, the following table has been inserted showing total rations of normal consumers *per diem*. It is necessary, however, to keep in mind the reservations to which such figures are subject. No exact numerical estimates of free or black-market supplies are available. The greatest probable error is caused by the difficulty of obtaining reliable figures for potato consumption, potatoes having been free in many countries for part of the time, or rationed only locally and in varying degree.

In Germany the total calorie level of the rations was maintained throughout the war remarkably close to 2000 calories a day—which in a differential system of rationing may be considered as adequate. Rations in Czechoslovakia though slightly lower were not signally deficient in calories. The Netherlands maintained a level of around 1800 calories a day until 1944, when it became a theatre of war; the level then began to fall and organized rationing eventually broke

TABLE II.
TOTAL AVERAGE RATIONS OF NORMAL CONSUMERS
(calories per diem)

Country	1940	1941	1942	1943	1944
Germany	2125	2020	1940	1990	2000
Czechoslovakia	2045	1950	1875	1800	1760
Netherlands	—	1800	1785	1845	1765
Finland	1790	1650	1375	1640	1775
Norway	—	1580	1445	1445	1445
Belgium	—	1375	1325	1365	1555
Baltic States	—	—	1350	1305	1420
Slovakia	—	—	1350	1310	1230
France	—	1230	1110	1065	1135
Poland (Gov't. General)	—	1290	1235	1135	1160
Italy	—	1160	1020	930	990

*Potatoes rationed in most countries temporarily and locally only. Estimated potato rations are included throughout in the above figures.

down in many places. In the next group—the Baltic States, Belgium, Finland, Norway and Slovakia—the level varied roughly between 1300 and 1700 calories a day. This level is too low to maintain health and efficiency without substantial additions from the illegal or the free market—additions which were at least partially forthcoming. France, with a level in the table of some 1100 calories, would seem to belong in reality to the same group, for these figures exclude some locally rationed goods and the substantial black-market supplies. Poland and Italy appear at the bottom of the list, but both are predominantly agricultural countries, less generally affected by rationing than the more highly industrialized countries of the West. It may be assumed as a general rule that black-market additions increased in relative importance as calorie levels fell; without such supplements it would indeed be difficult to explain how populations could have survived, albeit at deteriorating levels of health.

Rations of Different Consumer Categories

We have already noted that rationing during the second world war was more differentiated than during the first, and that the degree of differentiation became greater as rationing became more nearly total. When nearly all foods are rationed, freedom of consumer's choice is suspended, and people cannot, on their own initiative, satisfy special needs deriving from age, sex or occupation. A rationing system based upon equal *per caput* rations tends to favour persons with relatively small nutritional needs, and to punish those with relatively large needs. Hence, children and women would be better off than men and adolescents; light workers than heavy workers, and so on. On the other hand, children, whose need for protective foods (in particular milk) is relatively greater than that of adults, would be more subject to malnutrition (as opposed to under-nutrition). Modern rationing systems, therefore, are differentiated both according to quantity and to quality: persons whose work requires heavy expenditure of energy receive as a category larger rations of calorie foods, whilst children and expectant and nursing mothers receive greater rations of protective foods, such as milk. We consider first the quantitative aspects of differential rations.

Apart from the basic calorie ration (which should contain also the basic requirements of proteins, fats, minerals and vitamins), the need for calories is in direct proportion to muscular activity, and the greater this extra need (*i.e.*, the more heavy and sustained the work performed), the more important it becomes that the extra calories should be supplied in the form of condensed calorie foods, such as fats; bread, sugar and meat; for the necessary calorie intake in the form of potatoes and other low-calorie foods could not, because of their greater bulk, avoid causing serious digestive disturbances. In theory it would be most desirable and most economical to take into account the varying needs of a large number of groups, but for practical and administrative reasons the differentiation must be kept within narrower limits. The highly developed Swedish system, for instance, recognizes some fifty different groups, but in most countries a distinction is made between heavy and very heavy workers, though in addition some recognition is often made of the special needs of miners and lumbermen.

Table III shows heavy and very heavy workers' rations in 1944 and compares them with normal consumers' rations. In order to appreciate the figures contained in this table it is useful to recall the

TABLE III

HEAVY AND VERY HEAVY WORKERS' RATIOS AS PERCENTAGE OF
NORMAL CONSUMER RATIOS IN 1944

(calories per diem)

Country	Normal Consumer		Heavy Worker		Very Heavy Worker	
	Calories	Index	Calories	Index	Calories	Index
Germany						
Bread	880	100	1400	159	1765	201
Fats	240	100	350	146	640	267
Meat	95	100	225	237	315	332
Total	2000	100	2760	138	3500	175
Belgium						
Bread	750	100	1155	154	1370	183
Fats	110	100	200	182	245	223
Meat	60	100	95	158	120	200
Total	1550	100	2080	134	2370	153
Czechoslovakia						
Bread	880	100	1400	159	1770	201
Fats	185	100	295	159	585	316
Meat	95	100	225	237	315	332
Total	1760	100	2520	143	3270	186
Slovakia						
Bread	595	100	710	119	1135	191
Fats	65	100	130	200	130	200
Meat	75	100	110	147	110	147
Total	1245	100	1460	117	1885	151
Finland						
Bread	835	100	1340	160	1500	180
Fats	130	100	190	146	190	146
Meat	125	100	170	136	195	156
Total	1345	100	1955	145	2140	159
France						
Bread	815	100	910	112	910	112
Fats	40	100	95	225	155	375
Meat	65	100	90	142	125	208
Total	1135	100	1300	115	1400	123
Baltic States						
Bread	745	100	1265	170	1635	219
Fats	195	100	280	144	525	269
Meat	95	100	185	195	270	284
Total	1420	100	2115	148	2815	198
Netherlands						
Bread	805	100	1140	142	1475	182
Fats	140	100	210	150	415	296
Meat	45	100	110	244	185	411
Total	1765	100	2435	138	3255	184

estimates of relative calorie needs. It is assumed that an adult male engaged in a sedentary occupation requires on an average 2400 calories a day (individual requirements vary, of course, according to a good many circumstances such as age, weight, climate and individual rate of metabolism). Light work requires some 75 extra calories an hour, ordinary manual work some 140-300 calories an hour, and very heavy work 300 or more. Assuming an eight-hour day, a light worker would require some 3000 calories a day, an ordinary worker 3600 calories or more, and a very heavy worker 4800 calories or more. A shoemaker may manage with 2400 calories a day, a weaver with 2700; a farmhand may need 4100 calories or more, and a lumberman 5000 or more. But it should not be assumed that minor variations from these estimates, particularly for short periods, are necessarily harmful; these figures are in the nature of broad averages and lack precision in the individual case. Still, if rations fall too much or for too long below the needs indicated, the output of human energy decreases, as the organism cannot continue for long to give out more energy than it receives. In interpreting these figures it should be recalled, also, that workers' rations are supplemented by additions from the black market; moreover, in actual fact, consumption mostly takes place on a family basis. Where ordinary rations are relatively liberal, surpluses may arise within the family (particularly where there are several small children) increasing the actual consumption of the breadwinner. Where family rations are insufficient it is likely that the worker will share his extra rations with the family, making his actual consumption smaller than is indicated by ration figures. It is reported that, in order to prevent such sharing, workers in some cases have had to be fed in canteens. Hence the figures in Table III should be interpreted with many reservations; they indicate official aims rather than actual consumption. As a general rule it seems safe to conclude that rations have throughout been lower than is compatible with the optimum efficiency of heavy and very heavy labour, although frequently sufficient for the needs of persons engaged in light or moderate work.

Table IV is designed to show the relative calorie rations of children as compared with other consumer groups; the figures relate to the year 1944, but no great differences would emerge if prior years were also included. Different ideas exist as to the relative calorie needs of children; the scale adopted here is that laid down by the Health Organisation of the League of Nations, and does not differ greatly from most modern scales. It should be remembered, however,

TABLE IV

CHILDREN, NURSING AND EXPECTANT MOTHERS: RATIONS IN CALORIES PER DIEM COMPARED WITH NORMAL REQUIREMENTS IN 1944

(a-rations in calories. b-rations as percentage of requirements.)

Consumer Category		Germany	Belgium	Czechoslovakia	Slovakia
Adult Male (Requirements 2400)	a b	2000 83	1550 65	1760 73	1245 52
Nursing and Exp. Mothers (Requirements 2400-3000)	a b	2325 97-78	2410 100-80	2085 87-70	1505 62-50
Children 0-1 yr. (Requirements 720)	a b	1890 263	1915 266	1710 238	1335 185
Children 1-2 yrs. (Requirements 840)	a b	1890 225	1915 228	1710 204	1335 159
Children 2-3 yrs. (Requirements 1000)	a b	1890 189	1915 192	1710 171	1335 134
Children 3-4 yrs. (Requirements 1128)	a b	1805 160	1795 159	1710 152	1645 146
Children 4-5 yrs. (Requirements 1248)	a b	1805 145	1795 144	1710 137	1645 132
Children 5-6 yrs. (Requirements 1368)	a b	1805 138	1795 131	1710 125	1645 120
Children 6-7 yrs. (Requirements 1512)	a b	2085 138	1675 111	1830 121	1575 104
Children 7-8 yrs. (Requirements 1632)	a b	2085 128	1675 103	1830 112	1575 97
Children 8-9 yrs. (Requirements 1752)	a b	2085 119	1675 95	1830 104	1575 90
Children 9-10 yrs. (Requirements 1872)	a b	2085 111	1675 89	1830 98	1575 84
Children 10-11 yrs. (Requirements 1992)	a b	2370 119	1675 84	2115 106	1575 79
Children 11-12 yrs. (Requirements 2160)	a b	2370 110	1675 78	2115 98	1575 73
Children 12-13 yrs. (Requirements 2280)	a b	2370 104	1675 73	2115 93	1575 69
Children 13-14 yrs. (Requirements 2400)	a b	2370 99	1675 70	2115 88	1575 66
Young Persons 14-20 yrs. (Requirements 2400-3000)	a b	2130 89-71	1620 68-54	1760 73-59	1245 52-42

TABLE IV (*Continued*)

Finland	France	Baltic States	Netherlands	Norway	Poland (Gov't. Gen.)
1345 56	1135 47	1420 59	1765 73	1445 60	1160 48
1735 72-58	1490 62-50	1745 73-58	2090 87-70	1770 74-59	1160 48-39
1550 215	1175 163	1490 207	1610 224	1515 210	780 108
1425 170	1175 140	1490 177	1610 192	1515 180	780 93
1425 143	1175 118	1490 149	1610 161	1600 160	780 78
1345 119	1320 117	1395 124	1610 143	1600 142	780 69
1345 108	1320 106	1395 112	2040 163	1600 128	780 63
1345 98	1320 96	1395 102	2040 149	1600 117	780 57
1345 89	1135 75	1910 126	2040 135	1625 107	780 52
1345 82	1135 70	1910 117	2040 125	1625 99	780 48
1345 77	1135 65	1910 109	2040 116	1625 93	780 45
1345 72	1135 61	1910 102	2040 109	1625 87	780 42
1345 68	1135 57	1910 96	2040 102	1625 82	780 39
1345 62	1135 53	1910 88	2040 94	1625 75	780 36
1345 59	1135 50	1910 84	2040 89	1840 81	780 34
1345 56	1205 50	1910 80	2040 85	1840 77	780 33
1590 66-53	1205 50-40	1910 80-64	2170 90-72	1840 77-61	1160 48-39

that all scales of this nature relate to average conditions, and that they should be considered as the approximate aim of desirable consumption rather than as an exact measure of needs. Minor deficits, particularly for periods which are not too prolonged, are not necessarily of lasting harm to future growth and health. The scale relates to basic needs without taking into account additional needs caused by muscular activity, a factor especially important in the case of adolescents; hence it has been assumed here that the requirements of the age group 14-20 amount to 3000 calories a day.

The table indeed illustrates the great difficulties of differential rationing. The physiological requirements change gradually from month to month and from year to year; perfect adjustment to physiological needs would require different rations for each year-group or less. In reality, however, it has been necessary to divide children into three or four groups, whose relative needs are unevenly satisfied. The first group generally includes children 0-3 years of age, and as the needs of a new-born infant are much lower than those of a three-year-old, the former is relatively speaking much better off than the latter. The fewer the consumer groups and thus the wider the age-span within them, the greater are the inequalities, in terms of need, within each group and for the child population as a whole; the greater also is the likelihood that relative abundance will coexist with relative scarcity, and the more difficult it becomes to evaluate the nutritional level of the group as a whole.

Still without attaching undue weight to any particular figure, it can be observed that the younger the child is the greater is its relative ration. For the first year of life the actual ration was 263% of the required ration in Germany, and in no case was it lower than in Poland—108%. But everywhere this ratio falls as the age advances, so that it falls ultimately below standard requirements in all cases. This critical level, however, was reached at different ages in different countries; and the higher the general level of rations, the later it was reached: in Germany between the ages of 14 and 20, and in Poland between 1 and 2. It can be assumed that the situation was equally critical in countries of eastern and southern Europe, for which figures were missing, but the age group most badly hit is, throughout, that of adolescents and young persons, who were with few exceptions treated as normal consumers whilst their needs are on the average considerably higher. The percentages of normal requirements supplied by the rations varied from 70-90% in Germany and the Netherlands to 30-50% in Italy, Slovakia, France and Poland.

The remaining countries managed to realize 50-70% of the required ration for adolescents.

The fact that children's rations were on the whole higher in terms of need than were those of other consumer categories reflects in large part, no doubt, a deliberate policy. In any rationing system aiming at safeguarding the health of future generations account must be taken of the fact that actual consumption depends not only on the size of legal *per caput* rations, but also on the distribution of rations within the family. It is difficult to safeguard children's consumption if the parents' rations are themselves insufficient; and where the normal consumer's rations are low, it is usual to make children's rations liberal enough to create a surplus that can be used to make up deficiencies in the parental consumption. In fact, children's rations seem also to have served as an indirect allotment to parents or a premium on family consumption as compared with individual consumption. In Germany, for instance, the calorie surplus of an infant was sufficient to bring the consumption of both parents, who were normal consumers, much above standard requirements.

But even more important than these quantitative discriminations in favour of children were the qualitative ones. It has already been observed that growing children have relatively greater requirements than adults of proteins, minerals and vitamins. They need, therefore, relatively more protective foods such as fruit, vegetables and, above all, milk. And, as fruits and vegetables remained free in most countries, the most important difference in rations related to milk. In most cases milk was reserved exclusively for children and expectant and nursing mothers, whilst other categories were left without any regular distribution. Now, milk production was throughout better maintained than the production of other animal foods, and for this reason the quality of children's diets deteriorated less than one might *a priori* have assumed. Table V shows the milk rations of children in Continental Europe.

It should be noted that in Great Britain children under six years of age received 570 grammes of milk daily and children 6-14 years half of this amount. On the Continent children under three years of age received generally 750 grammes a day (except in Yugoslavia, Italy, Poland, Russia and Greece). The age-group 3-6 years was again fairly adequately supplied at the level of 500 grammes, except in the countries already mentioned. Real deficiencies developed only for older children, although on the whole rations were not lower than those in the United Kingdom; it should be remembered also

that consumption in most countries was already deficient before the war, and that in many cases even the low rations represented an improvement in rather than a reduction of the actual consumption of large categories of children.

This brief survey has shown to what extent differential rationing

TABLE V
MILK RATIONS FOR CHILDREN IN CERTAIN COUNTRIES AS OF AUGUST 1944
(grammes *per diem*)

Country	Under 3 yrs.	3-6 yrs.	6-10 yrs.	10-14 yrs.
Germany	750	500	250	250
Belgium	750	500	250	250
Czechoslovakia	750	750	250	250
Slovakia 0-1 yr. 1-3 yrs.	750 500	500 —	500 —	500 —
Finland 0-1 yr. 1-3 yrs.	900 600	600 —	600 —	600 —
France	750	750	250	250
Hungary 0-1 yr. 1-3 yrs.	1000 750	— 500	— 500	— 500
Baltic States	750	500	250	250
Netherlands	750	500	500	500
Norway	750	750	500	500
Yugoslavia (Croatia)	500	500	—	—
United Kingdom	570	570	285	285
Switzerland	670	670	670	670

developed during the war. It is more difficult to evaluate the results of the system, but on the whole it seems that children constituted the most favoured group. Families were better off than isolated persons who were normal consumers; women better off than men. Adolescents, on the other hand, were probably worse off on an average than normal consumers, and it is doubtful whether the extra rations of very heavy workers in particular were sufficient to compensate for the extra calories required for their work.

TABLE VI (*Continued*)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

	BULGARIA			
	1927/28	1942	1943	1944
Bread & Flour	1980	1190	1210	1890
Cereals	190	75	75	55
Potatoes	40	—	—	—
Sugar, Jam, etc.	110	205	235	175
Meat & Meat Prod.	240	195	240	225
Fish	5	—	—	—
Fats	205	340	340	280
Whole Milk	45	} 200*	200*	200*
Skimmed Milk	5		—	—
Cream	—	—	—	—
Cheese	50	55	40	40*
Eggs	15	60*	60	30*
Fresh Vegetables	40	—	—	—
Fresh Fruit	35	—	—	—
Total	2960	2320	2400	2900

	CZECHOSLOVAKIA (Protectorate)				
	1931/1932	1941	1942	1943	1944
Bread & Flour	1190	950	945	990	1045
Cereals	70	160	100	115	95
Potatoes	220	510	535	520	405
Sugar, Jam, etc.	305	340	340	340	340
Meat & Meat Prod.	285	210	160	140	110
Fish	—	—	—	—	—
Fats	405	250	250	260	265
Whole Milk	275	(395)	395	365	360
Skimmed Milk	—	—	—	—	—
Cream	—	—	—	—	—
Cheese	30	—	—	—	—
Eggs	40	30	15	15	15
Fresh Vegetables	30	—	—	—	—
Fresh Fruit	55	—	—	—	—
Total	2905	2845	2740	2745	2635

TABLE VI (*Continued*)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

	FINLAND				
	1928	1941	1942	1943	1944
	Bread & Flour	1010	1095	1045	1185
Cereals	160	—	—	—	—
Potatoes	250	—	—	—	—
Sugar, Jam, etc.	310	225	175	70	105
Meat & Meat Prod.	250	160	75	75	195
Fish	20	—	—	—	—
Fats	420	320	190	280	245
Whole Milk	555	460	430	460	465
Skimmed Milk	20	—	—	—	—
Cream	55	—	—	—	—
Cheese	10	—	—	—	—
Eggs	15	—	—	—	—
Fresh Vegetables	—	—	—	—	—
Fresh Fruits	—	—	—	—	—
Total	3075	2260	1915	2070	2220

FRANCE

	1941	1942	1943	1944
Bread & Flour	925	900	920	1040
Cereals	75	55	25	35
Potatoes	(175)	(165)	(165)	(165)
Sugar, Jam, etc.	110	110	110	120
Meat & Meat Prod.	160	100	75	100
Fish	—	—	—	—
Fats	180	150	115	70
Whole Milk	(345)	345	345	335
Skimmed Milk	—	—	—	—
Cream	—	—	—	—
Cheese	30	30	30	30
Eggs	15	15	15	15
Fresh Vegetables	—	—	—	—
Fresh Fruits	—	—	—	—
Total	2015	1870	1800	1900

TABLE VI (*Continued*)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

	BULGARIA			
	1927/28	1942	1943	1944
Bread & Flour	1980	1190	1210	1890
Cereals	190	75	75	55
Potatoes	40	—	—	—
Sugar, Jam, etc.	110	205	235	175
Meat & Meat Prod.	240	195	240	225
Fish	5	—	—	—
Fats	205	340	340	280
Whole Milk	45	} 200*	200*	200*
Skimmed Milk	5		—	—
Cream	—	—	—	—
Cheese	50	55	40	40*
Eggs	15	60*	60	30*
Fresh Vegetables	40	—	—	—
Fresh Fruit	35	—	—	—
Total	2960	2320	2400	2900

	CZECHOSLOVAKIA (Protectorate)				
	1931/1932	1941	1942	1943	1944
Bread & Flour	1190	950	945	990	1045
Cereals	70	160	100	115	95
Potatoes	220	510	535	520	405
Sugar, Jam, etc.	305	340	340	340	340
Meat & Meat Prod.	285	210	160	140	110
Fish	—	—	—	—	—
Fats	405	250	250	260	265
Whole Milk	275	(395)	395	365	360
Skimmed Milk	—	—	—	—	—
Cream	—	—	—	—	—
Cheese	30	—	—	—	—
Eggs	40	30	15	15	15
Fresh Vegetables	30	—	—	—	—
Fresh Fruit	55	—	—	—	—
Total	2905	2845	2740	2745	2635

TABLE VI (*Continued*)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

	FINLAND				
	1928	1941	1942	1943	1944
Bread & Flour	1010	{ 1095	1045	1185	1210
Cereals	160	—	—	—	—
Potatoes	250	—	—	—	—
Sugar, Jam, etc.	310	225	175	70	105
Meat & Meat Prod.	250	160	75	75	195
Fish	20	—	—	—	—
Fats	420	320	190	280	245
Whole Milk	555	460	430	460	465
Skimmed Milk	20	—	—	—	—
Cream	55	—	—	—	—
Cheese	10	—	—	—	—
Eggs	15	—	—	—	—
Fresh Vegetables	—	—	—	—	—
Fresh Fruits	—	—	—	—	—
Total	3075	2260	1915	2070	2220

FRANCE

	1941	1942	1943	1944
Bread & Flour	925	900	920	1040
Cereals	75	55	25	35
Potatoes	(175)	(165)	(165)	(165)
Sugar, Jam, etc.	110	110	110	120
Meat & Meat Prod.	160	100	75	100
Fish	—	—	—	—
Fats	180	150	115	70
Whole Milk	(345)	345	345	335
Skimmed Milk	—	—	—	—
Cream	—	—	—	—
Cheese	30	30	30	30
Eggs	15	15	15	15
Fresh Vegetables	—	—	—	—
Fresh Fruits	—	—	—	—
Total	2015	1870	1800	1900

TABLE VI (Continued)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

	GERMANY					
	1927/28	1940	1941	1942	1943	1944
Bread & Flour	995	955	940	910	990	1045
Cereals	70	140	140	140	140	140
Potatoes	355	(600)	(600)	600	600	600
Sugar, Jam, etc.	195	275	290	290	290	285
Meat & Meat Prod.	350	225	200	160	140	110
Fish	10	—	—	—	—	—
Fats	485	365	330	330	330	350
Whole Milk	280	290	290	290	290	290
Skimmed Milk	5	(60)	(60)	(60)	(60)	(60)
Cream	—	—	—	—	—	—
Cheese	40	45	45	45	45	45
Eggs	35	15	15	15	15	15
Fresh Vegetables	30	—	—	—	—	—
Fresh Fruits	50	—	—	—	—	—
Total	2900	2970	2910	2840	2900	2940

ITALY

	1929	1941	1942	1943	1944
Bread & Flour	1320	785	660	610	885
Cereals	605	370	375	415	355
Potatoes	—	(115)	115	90	45
Sugar, Jam, etc.	55	105	100	110	35
Meat & Meat Prod.	90	130	100	60	40
Fish	15	—	—	—	—
Fats	305	180	145	145	160
Whole Milk	50	—	—	—	—
Skimmed Milk	—	—	—	—	—
Cream	—	—	—	—	—
Cheese	30	(55)	55	75	70
Eggs	35	(15)	15	—	—
Fresh Vegetables	45	—	—	—	—
Fresh Fruits	10	—	—	—	—
Total	2560	1755	1565	1505	1590

TABLE VI (*Continued*)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

	NETHERLANDS				
	1935/36	1941	1942	1943	1944
Bread & Flour	1210	1070	1020	1080	1070
Cereals	60	190	180	160	160
Potatoes	370	370	500	620	555
Sugar, Jam, etc.	250	240	255	255	255
Meat & Meat Prod.	235	140	135	75	70
Fish	10	—	—	—	—
Fats	510	315	275	245	240
Whole Milk	310	445	410	380	390
Skimmed Milk	25	—	—	—	—
Cream	10	—	—	—	—
Cheese	45	70	70	45	40
Eggs	40	15	—	—	—
Fresh Vegetables	55	—	—	—	—
Fresh Fruits	65	—	—	—	—
Total	3195	2855	2845	2860	2780

NORWAY

	1927/28	1941	1942	1943	1944
Bread & Flour	1090	1090	930	940	940
Cereals	55	—	—	—	—
Potatoes	205	510	510	510	510
Sugar, Jam, etc.	280	165	165	165	165
Meat & Meat Prod.	310	—	—	—	—
Fish	65	—	—	—	—
Fats	590	465	340	340	340
Whole Milk	290	360	360	360	360
Skimmed Milk	45	—	—	—	—
Cream	85	—	—	—	—
Cheese	70	—	—	—	—
Eggs	30	—	—	—	—
Fresh Vegetables	15	—	—	—	—
Fresh Fruits	25	—	—	—	—
Total	3155	2590	2305	2315	2315

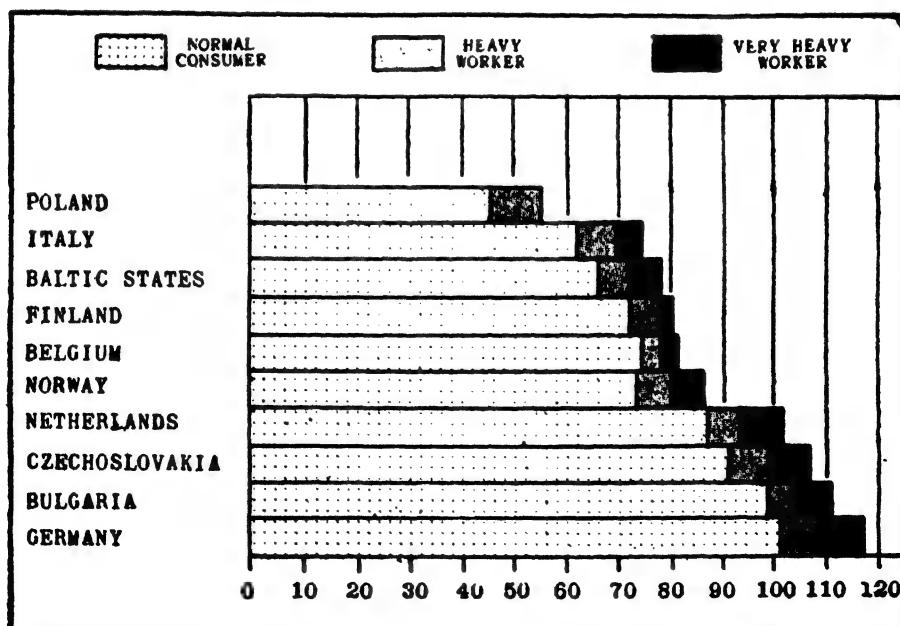
TABLE VI (Continued)

COMPARISON OF FOOD CONSUMPTION PER CONSUMPTION UNIT OF A TYPICAL FAMILY DURING THE INTER-WAR PERIOD AND 1940-1944

(Calories per consumption unit)

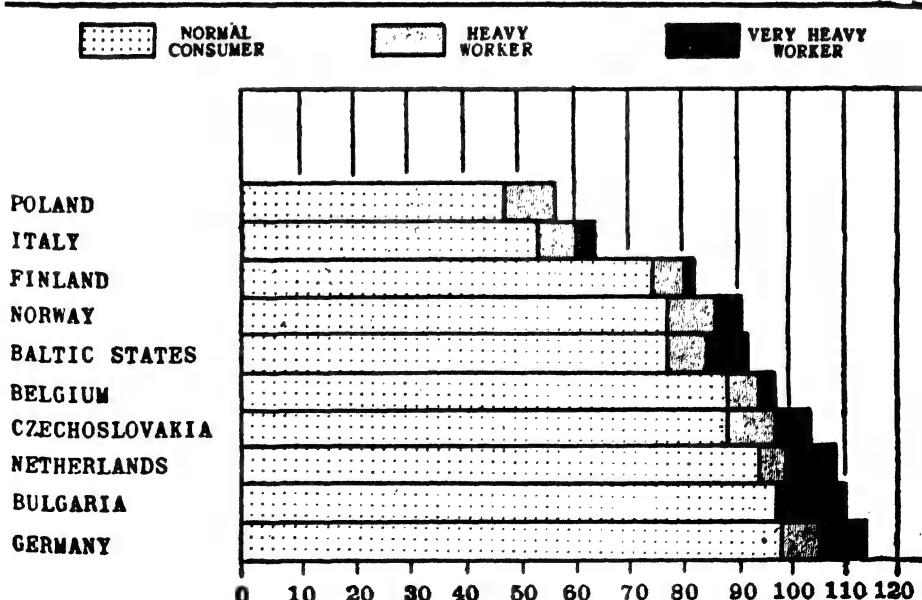
	POLAND (Gov't. General)				
	1929	1941	1942	1943	1944
Bread & Flour	1550	690	705	820	840
Cereals	100	70	90	45	50
Potatoes	445	490	415	330	345
Sugar, Jam, etc.	215	175	165	115	115
Meat & Meat Prod.	335	60	45	55	55
Fish	5	—	—	—	—
Fats	120	130	90	—	—
Whole Milk	140	135	125	—	—
Skimmed Milk	5	—	—	—	—
Cream	20	—	—	—	—
Cheese	15	25	25	—	—
Eggs	15	55	—	—	—
Fresh Vegetables	50	—	—	—	—
Fresh Fruits	10	—	—	—	—
Total	3025	1830	1650	1365	1405

DIAGRAM II

WORKERS' DIETS IN 1944 AS PERCENTAGE OF PRE-WAR
(Calories per consumption unit per diem)

In Diagram II the rations per consumption unit are compared with peacetime consumption figures. The shaded areas in the diagram indicate the extra calories supplied to heavy and very heavy workers' families; the actual average falls between the figures for normal consumers' and very heavy workers' rations. The pre-war consumption has in all cases been taken as equal to 100; it should be remembered, however, that the peacetime figures are of varying value and representativeness. They relate, on the whole, to the skilled and better-paid portion of the industrial working class, and may tend to over-estimate rather than to underestimate average consumption in urban areas. As seen from the table, the level of consumption differs considerably from one country to another; but an equal percentage decrease in consumption cannot be taken to imply an equal nutritional sacrifice. Nevertheless, the decrease in consumption for the Continent as a whole is less drastic than a superficial survey of normal-consumer rations would indicate, and the reductions would appear even smaller if it had been possible to include agricultural labour and farmers, and supplies derived from the black market.

DIAGRAM III
WORKERS' DIETS IN 1944 AS PERCENTAGE OF NORMAL
REQUIREMENTS (3000 CALORIES)
(*Calories per consumption unit per diem*)



In order to permit of more precise international comparisons, Diagram III has been inserted. It shows consumption per consumption unit as a percentage of normal requirements (3000 calories *per diem* per consumption unit). It should be remembered, however, that large sections of the population in Europe, even in peacetime, existed on a less generous allowance. The 3000 standard relates to a population of an average body weight of 70 kgs. living in a temperate climate, although in southern Europe a warmer climate and a lower average body weight permit people to manage with a considerably smaller intake than in northern and western Europe. But it is impossible here to undertake corrections for such factors.

It has unfortunately been impossible also to construct index figures for the areas most seriously affected by the war—Greece, parts of Yugoslavia and the parts of Russia occupied by the Germans during some period of the war. These areas suffered, at least temporarily, from outright famine. A brief description of developments in Greece will give an idea of the conditions prevailing in such areas.¹ Greece normally imported some 40% of her wheat, all of her sugar, and considerable quantities of meat; in all, some 20-25% of her foods were derived from imports. After the Axis aggression, imports were cut off, while domestic production fell sharply; as late as 1945 grain production was only 60% of normal, draught animals were down by 45%, cattle by 40%, sheep by 30%, etc. Price-control and rationing broke down early, and even the black market ceased to supply significant quantities of food. The calorie value of the officially distributed foods was estimated in the Athens-Piraeus area to be 458 a person a day in July 1941, 183 in November, and 357 in March 1942. Communal soup kitchens supplied, according to the same estimates, a further 140 calories a day. Taking into account all the sources of supply, including the black market, the majority of the city population is estimated to have received some 600-800 calories a day per head, or less than a third of requirements. From the beginning of 1942, however, some imports became available, and relief activities inaugurated by the International Red Cross and continued by the Mixed Commission of representatives of the International and the Swedish Red Cross gradually brought the situation under control. The activities of UNRRA have further alleviated the situation, bringing the consumption up to some 2000 calories a day per head of the population.

In considering the situation in Poland and Yugoslavia, the pre-

¹ Cf. also *Food Rationing and Supply, 1943/44*, pages 37-40.

dominantly agrarian nature of these countries must be taken into account. Official rations in Poland represented perhaps some 50% of requirements and may have been accessible to Poles in the provinces "incorporated" with Germany (Germans received the German rations); but it is not possible to make a generalization on the basis of conditions in the "Government General." Rations were less generally available, and the authorities were often obliged—in order to maintain the working efficiency of labour employed in industries considered as essential—to have recourse to canteen feeding. The insufficiency and irregularity of rationing compelled city dwellers to have recourse to the black market in order to survive; but as prices soared out of their reach, ordinary wage-earners became subject to great privations. The rations of Jews amounted to half of the insufficient rations granted to Poles; and when the Jews were officially considered exterminated, no further issues of rationing cards were made to them.

A second category of countries is formed by Italy and France. Legal rations, at least by the end of the war, probably represented not more than 60% of normal requirements. As regards Italy, however, it should be recalled that peacetime consumption was fairly low. Moreover, the rationing system never reached the completeness and consistency of more administratively advanced nations. Food production was maintained, more or less at the normal level during 1940 and 1941, but began to decline in 1942. Nation-wide rations existed only for cereals, fats and sugar; most animal products and potatoes were locally rationed according to supply. The local rations varied from place to place, and from period to period, making exact estimates exceedingly hazardous. As some 12 million self-suppliers were allowed to retain food sufficient for their own consumption, the fluctuations in the rations of the marginal urban population were unusually wide. According to estimates by the U.S. Department of Agriculture,¹ the *per caput* calorie intake in the period 1933–1937 was 2550 per head of the total population (corresponding to about 3400 calories per consumption unit). During the war years this figure is supposed to have dwindled to about 2000 in 1943, and to about 1900 in 1944. Owing to the lack of an efficient distribution system, the reduction in the urban rations was much larger, though it is estimated that from 1943 the additions to rations from non-rationed sources may have amounted on an average to about 800 calories a day per person. After the invasion of Italy, and up to the

¹ *World Food Situation, 1946.* Washington, 1946.

collapse of German resistance, the country was divided into two or more zones and it is difficult to give a picture of average consumption.

The situation in France is in many respects similar to that in Italy. The large rural population continued to live more or less as usual, and the curtailment of supply fell heavily on the urban populations. Hence, while in the crop year 1943/44 French food supplies allowed 2150 calories a person a day (or 2800-2900 calories per consumption unit), the actual normal consumer family in the cities may have received considerably less than 2000 per consumption unit; it is known, however, that all but the poorest city groups received substantial additions from sources outside the official rations. France suffered as much from a maldistribution of food as from absolute shortages.

Conditions in Finland varied considerably as a consequence of the two separate wars in which she was involved, and of fluctuations in imports. Almost 60% of the population is occupied in agriculture, and while their consumption may not have been greatly affected, the position of the city population deteriorated considerably. But together with the Baltic States, Belgium, the Netherlands, and Norway, she belonged to the category of German-dominated areas where the calorie intake remained on a level fluctuating on the whole between 2500 and 2800 calories per consumption unit a day. Consumption in Germany and Czechoslovakia was maintained fairly consistently between 2800 and 3000 calories per consumption unit.

Considering the Continent as a whole, then, one finds that the calorie consumption was for the large majority of people maintained at levels which, if not up to optimum requirements, were at least sufficient to prevent starvation, or even a really serious state of calorie deficiency. The rural populations (except as a result of direct warfare) were hardly affected; and such decreases in consumption as took place were concentrated among the marginal city populations, in particular those too poor to patronize the black market. The position of this marginal population varied considerably. It was serious—and indeed desperate—in Poland, parts of Yugoslavia, and during certain periods in Greece, and it was probably as bad in the parts of Russia which were occupied by Germany. The position was highly unsatisfactory in Italy and France, due largely to imperfections of distribution. Such starvation or actual privation as existed on the Continent as a whole was the result, not so much of a general lack of calories, as of a conscious policy on the part of the occupying

power of grading diets according to social or other criteria (the extermination of the Jews, discrimination against the Poles, etc.) and of the maldistribution of food owing to inefficient rationing systems, or to the breakdown of economic activity in general following upon direct physical destruction in warfare.

This conclusion may at first sight appear paradoxical. Supplies were curtailed; imports normally amounting to some 10% of total calorie supplies fell away altogether; crop production, owing to the lack of manpower, draught animals, fertilizers, etc., also fell throughout the war; according to estimates of the United States Department of Agriculture the Continental food production in 1943/44 may have been some 15% lower than pre-war.¹ The explanation of the situation, of course, rests partly on the fact that calorie consumption before the war in some areas was relatively high, permitting certain reductions in consumption without immediate serious effects. But for the most part the explanation is to be sought in shifts in the composition of the diet. Though in wartime the main emphasis naturally falls on the adequacy of the diet in respect of calories, it is in the long run no less important to consider the quality of the diet.

The Animal-Vegetable Ratio

The majority of diets are based on cereals and root crops. These staple foods hold their position by virtue of their cheapness, and as families or nations increase in wealth they tend to consume more sugar, fruits, vegetables, meat, milk, milk products and eggs. As nutritional standards increase people consume more calories of animal origin and fewer calories of vegetable origin. Indeed, the balance between animal and vegetable calories in the diet—the so-called *animal-vegetable ratio*—is perhaps the most significant single index of dietary standards. Where diets are adequate according to modern standards—as in certain northwestern European nations or in North America—the animal-vegetable ratio was before the war approximately 40:60. This does not mean that satisfactory diets could not be constructed on a different ratio; but according to all indications a free consumer's choice seems to lead to adequate diets on or about this level.

But animal foods are indirectly derived from vegetable crops. Owing to incomplete assimilation of feed by the animals, their energy requirements for activity and maintenance of body tempera-

¹ *World Food Situation*, page 43.

ture, the necessity of maintaining breeding stock, production of inedible portions, and unavoidable losses in slaughter, a part only of the feed given to animals is returned in the form of animal foods fit for human consumption. The ratio between feed calories and the animal food product varies with agricultural technique and the nature of the product. Some four or five feed calories may be used to produce one calorie in the form of milk, whilst eighteen or more may be required to produce one calorie in the form of beef or eggs. Thus by increasing the animal ratio in the diet we multiply the need for primary crop calories. If, as in Europe, before the war, about seven feed calories on an average are required to produce one calorie of animal food, the number of primary calories needed to produce a diet containing 3000 calories fit for human consumption varies from that number, if the diet is altogether of vegetable origin, to 21,000 if the diet is altogether of animal origin. A diet composed of half animal and half vegetable calories requires 12,000 primary calories or four times as many as a pure vegetable diet; similarly, an animal-vegetable ratio of 40:60 requires 10,200 primary calories. Some land is so poor that its most economical use is for grazing, and some by-products of crops are best used in the form of feed; moreover, crop land for optimum productivity requires the application of animal manure. But with such reservations, it is obvious that a country having a fairly high animal ratio, can divert crops from animal to direct human consumption and maintain the total consumption of calories in the human diet in spite of fairly large decreases in total crops. Thus let us assume that a country has an animal-vegetable ratio of 30:70 and that total crops decrease by, say, 20%. Assuming that productivity is not affected, the calorie equilibrium in the human diet would be restored at an animal-vegetable ratio of 21:79. Hence, the fact of a high animal ratio implies the presence of a food buffer of crops that can be diverted to direct human consumption, in addition to the calorie reserve constituted by the livestock itself. In countries with a low animal-vegetable ratio, crop failures result in a direct decrease in the supply of human food, and, if increased imports fail to materialize, in famine.

According to estimates made by J. H. Richter,¹ the Continent of Europe produced before the war roughly 90% of its calorie food requirements; 78% of the human diet was of vegetable and 22% of animal origin. If we assume that imports stopped and domestic

¹ "Continental Europe's Prewar Food Balance," U.S. Department of Agriculture, *Foreign Agriculture*, August 1942.

crops fell by 15%, an assumed pre-war human consumption of 3000 calories a day should in theory have been maintained at an animal-vegetable ratio of 12:88, a reduction which would still leave animal consumption at a higher level than in many other parts of the world. Obviously, however, neither before nor during the war did the Continent constitute a real economic unit. These broad averages cover great national differences. In Germany the peacetime ratio was about 1 to 2, and in Scandinavia 2 to 3. In the poorer countries, such as Poland or Bulgaria, it was 1 to 4 or more. Diagram IV below shows the ratio of vegetable calories in the diet during the years 1941-1944 and before the war in typical working-class families.

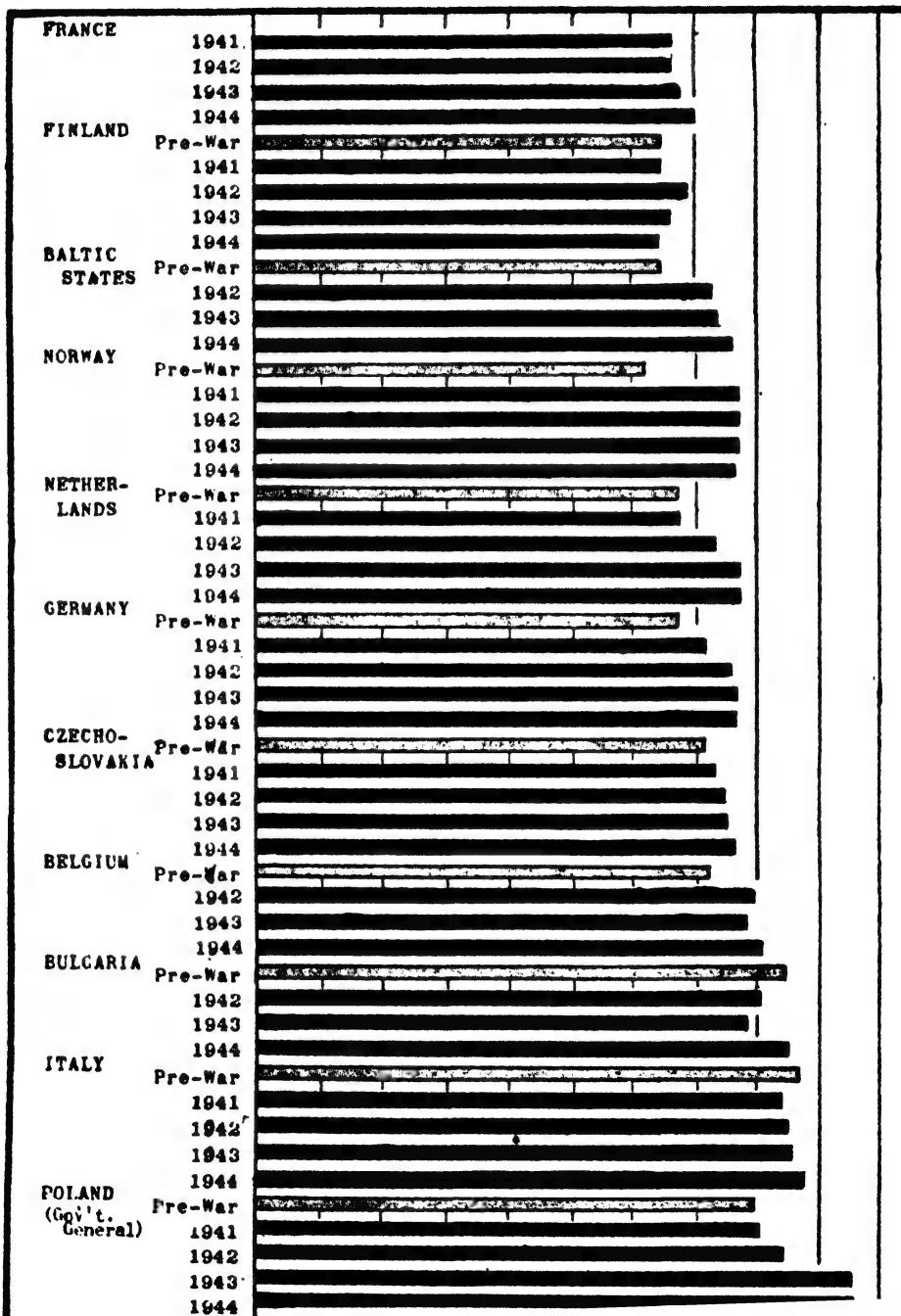
As will be seen from the diagram the German authorities in charge of economic policy followed the natural course of decreasing the production and consumption of animal foods and using primary crops in increasing degree for direct human consumption. But the reduction of animal consumption was uneven. In Germany itself the percentage of vegetable food increased from about 67% to 77% of total calories; in 1944 percentages about the same as in Germany or slightly lower were found in Finland, the Netherlands, Norway, the Baltic States and France. In the same year figures between 90% and 70% were found in Czechoslovakia, Italy, Bulgaria and Belgium. Almost exclusively vegetable diets of 90% or more were found in Poland, and by all indications in parts of Yugoslavia, occupied Russia and Greece.

We find then, considering the Continent as a whole, an uneven but in many cases fairly high ratio of animal consumption, together with varying degrees of calorie deficiencies. To a certain extent this depends upon the difficulty of undertaking rapid changes in agriculture. As artificial fertilizers grew scarce, livestock became an ever more important source of animal manure, without which future crop production must have fallen drastically. It should be recalled also that the animal proportion was maintained more cheaply than before the war. Milk is not only the nutritionally most important of all animal foods, but it is also cheaper in terms of feed calories than meat and eggs. All over the Continent, then, we find the milk herds relatively well maintained, whilst pigs and hens, which compete more directly with human beings for food, have been drastically reduced.

However, the relatively favourable position of Germany with respect to both the quantity and the quality of her diet was obtained to a large extent at the expense of the Continent as a whole. Imported animal products from occupied Europe lowered the diet in the ex-

DIAGRAM IV

PERCENTAGE OF VEGETABLE CALORIES IN THE DIET OF A
TYPICAL FAMILY, PRE-WAR AND DURING THE YEARS 1941-1944
(Calories per consumption unit per diem)



porting country not by the calorie value of the animal export alone, but by the amount of primary calories which could in the absence of such export have been diverted to direct human consumption. But it would be difficult, if not impossible, to obtain a reliable estimate of the quantitative importance of such factors, for the cycle of farming generally requires animals to produce crops as well as crops to produce and maintain animals. But considering the wartime experience as a whole, one is struck with the degree of success with which the rationing authorities were able to maintain not only a rough calorie balance for human consumption, but also the precarious and shifting balance between animal and vegetable production. The inequalities and injustices of the system were founded on political considerations of varying nature, rather than on economic necessities or on the absence of administrative skill or potential resources.

Composition of Diets

Having considered the calorie content of diets, and the sweeping shift from animal to vegetable consumption, it is now necessary to consider the nutritional value of the wartime diets.

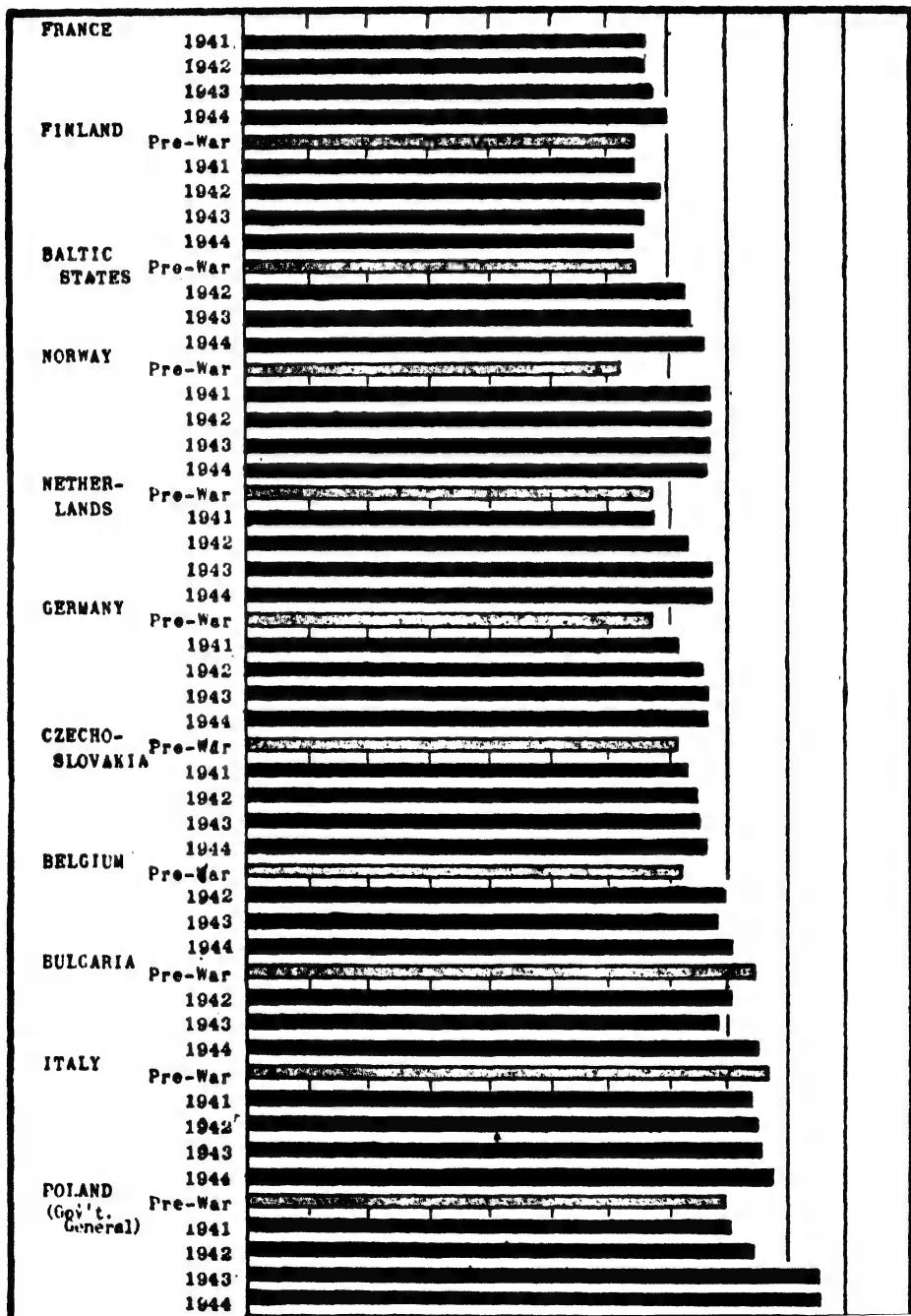
As already indicated, the cheapest and most abundant source of energy is contributed by carbohydrates. The lower the quality of the diet the higher is their proportion in it. Obviously, then, the first effect of the lowered wartime rations was an increase in the relative amount of carbohydrates consumed—in particular, in the form of bread and potatoes; sugar consumption was on the whole maintained at nutritionally adequate levels.

In theory, fats are important as a concentrated source of energy and are interchangeable with carbohydrates. Fat is one of the chief energy-giving constituents of the diet, and is of special importance to persons performing heavy work or living in a cold climate and therefore in need of a diet rich in calories. It is impossible to lay down either the relative or the absolute amount of fat needed, but when fat consumption falls much below the levels to which people have become accustomed (in the West some 400-700 calories a day) morale and efficiency are rapidly affected and there develops a feeling of hidden hunger and general discomfort. Indeed, there is abundant testimony to the effect that the decrease of fat in the diet has been more keenly felt than almost any other individual shortage.

Fats purchased as such, however, represent only a part of total fat consumption. Much is consumed indirectly in the form of milk,

DIAGRAM IV

PERCENTAGE OF VEGETABLE CALORIES IN THE DIET OF A
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(Calories per consumption unit per diem)



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Composition of Diets

Having considered the calorie content of diets, and the sweeping shift from animal to vegetable consumption, it is now necessary to consider the nutritional value of the wartime diets.

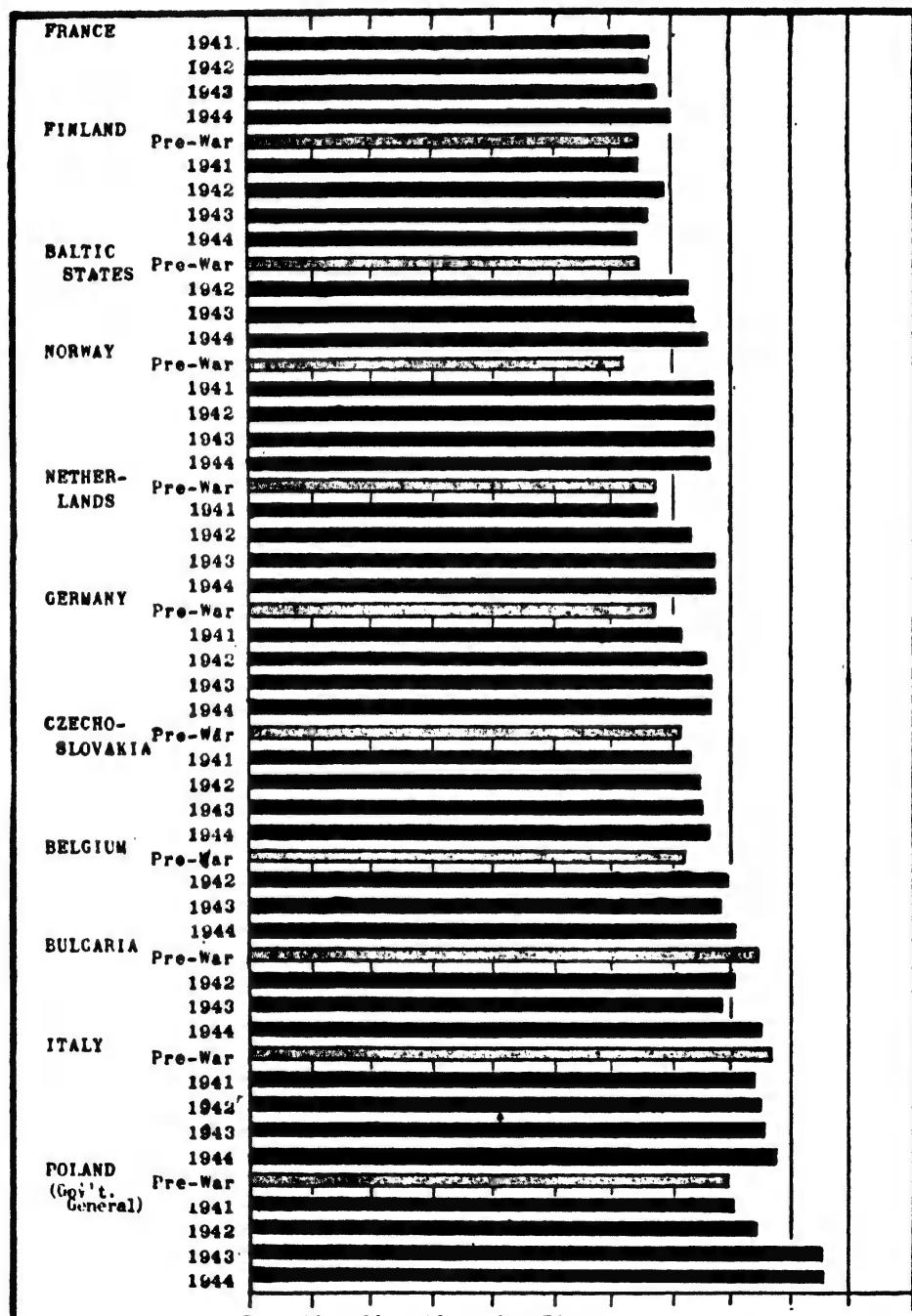
As already indicated, the cheapest and most abundant source of energy is contributed by carbohydrates. The lower the quality of the diet the higher is their proportion in it. Obviously, then, the first effect of the lowered wartime rations was an increase in the relative amount of carbohydrates consumed—in particular, in the form of bread and potatoes; sugar consumption was on the whole maintained at nutritionally adequate levels.

In theory, fats are important as a concentrated source of energy and are interchangeable with carbohydrates. Fat is one of the chief energy-giving constituents of the diet, and is of special importance to persons performing heavy work or living in a cold climate and therefore in need of a diet rich in calories. It is impossible to lay down either the relative or the absolute amount of fat needed, but when fat consumption falls much below the levels to which people have become accustomed (in the West some 400-700 calories a day) morale and efficiency are rapidly affected and there develops a feeling of hidden hunger and general discomfort. Indeed, there is abundant testimony to the effect that the decrease of fat in the diet has been more keenly felt than almost any other individual shortage.

Fats purchased as such, however, represent only a part of total fat consumption. Much is consumed indirectly in the form of milk,

DIAGRAM IV

PERCENTAGE OF VEGETABLE CALORIES IN THE DIET OF A
TYPICAL FAMILY, PRE-WAR AND DURING THE YEARS 1941-1944
(Calories per consumption unit per day)



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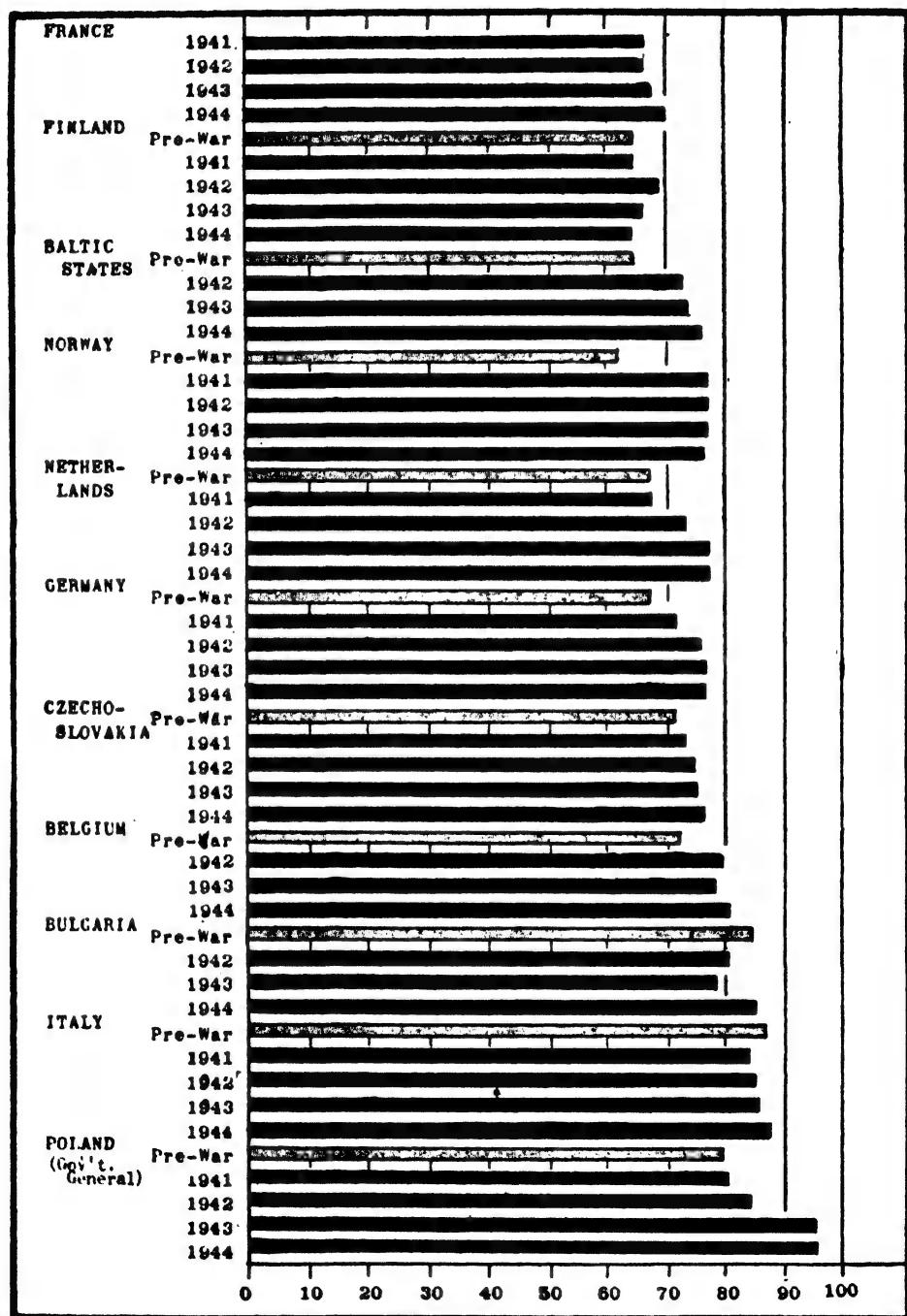
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Fats purchased as such, however, represent only a part of total fat consumption. Much is consumed indirectly in the form of milk,

cheese, cream, meat, bacon, nuts, etc. Most of these indirect sources of fat have also been rationed, and in many cases their fat content has been reduced, either by direct government regulation as in the case of milk and cheese (the sale of cream was as a rule altogether prohibited), or as a result of the leaner feeding of slaughter animals. With reference to the figures of fats purchased as such, it should be remembered that they underestimate the actual contraction of fat consumption.

TABLE VII
FATS "PURCHASED AS SUCH": AVERAGE RATIONS OF A TYPICAL FAMILY
(Calories per diem per consumption unit)

Country	1940	1941	1942	1943	1944
France		180	150	115	70
Belgium			135	135	165
Italy		180	145	145	160
Netherlands		315	275	245	240
Finland		320	190	280	245
Czechoslovakia	230	250	250	260	265
Baltic States			300	275	275
Bulgaria			340	340	280
Norway		465	340	340	340
Germany	365	330	330	330	350

Among Western nations dieticians seem to favour diets furnishing one-fourth to one-third of total calories in the form of fat. The lower of these figures would give a daily allowance of about 700 calories; how large a part of this is in the form of indirect consumption varies with a great many circumstances and with local habit; fats purchased as such, however, rarely exceed 500 calories a day, and figures of 400 or thereabouts are not necessarily to be considered as inadequate. With such figures in mind, it can easily be perceived how general and how drastic the reduction in fat consumption has been. The highest figures were found in Denmark, Norway and Germany, with rations in 1944 of about 300 calories or more per consumption unit; rations between 200 and 300 were found in the same year in the Baltic States, Czechoslovakia, Finland, and the Netherlands, and below 200 in Italy, Belgium and France.

Protein needs are even more difficult to determine with authority. Proteins are the chief body-building constituents in the diet, although they can be used also for generation of energy. The Health Organisation of the League of Nations states that: "In practice, the

protein intake for all adults should not fall below 1 grammie of proteins per kilogramme of body weight. The protein should be derived from a variety of sources, and it is desirable that a part of the protein should be of animal origin." ¹ The needs of children, pregnant and nursing mothers are higher—amounting to 3.5 grammes per kilogramme of body weight for children 1-3 years of age. Such estimates, however, do not take into account the fact that the body requires a great number of different kinds of proteins; the optimum total intake, it appears, depends also on the proportion of these elements in the diet. On the whole, modern research places increasing emphasis on the importance of protein intake sufficient in quantity and of the right quality. But disregarding the complicated question as to the most efficient composition of proteins, the average adult male would require roughly 300 calories derived from proteins a day, an estimate which, however, leans toward liberality as compared with actually demonstrated need; and according to certain authorities an intake of 150 calories a day should not necessarily be considered as inadequate. It is impossible, also, to say with authority how large a part of total protein should be in the form of protein of animal origin. Vast populations have and do exist on almost exclusively vegetable diets, and there is little direct evidence to indicate that a temporary shortage (or even absence) of animal proteins, except in the form of milk for children, has a serious effect on health.

It is assumed that when proteins constitute some 5-10% of total calories in a diet adequate in calories, there is unlikely to be a critical deficiency of this constituent. When calorie intake is insufficient to maintain energy equilibrium in the body, proteins are broken down and used as fuel, so that little would be gained by increasing the proportion of proteins in the diet. The relative supply of proteins in the diet may be illustrated by a few examples.

Cereals, peas, beans and nuts are good sources of vegetable proteins, but potatoes are not nearly so rich a source. One kilogramme of whole wheat bread contains 97 grammes, or about 390 calories of proteins, about 500 grammes containing the minimum need for an adult a day, whilst one kilogramme of potatoes contains only 20 grammes of proteins. Considering subsidiary animal or vegetable sources of proteins, minimum total requirements seem to be satisfied

¹ "Report on the Physiological Bases of Nutrition," drawn up by the Technical Commission of the Health Committee of the League of Nations, *Quarterly Bulletin of the Health Organisation of the League of Nations*, Vol. V, Extract No. 6.

when bread rations are adequate, and serious protein deficiency occurs only where the diet contains more potatoes than bread, peas, beans, etc. Generally speaking, therefore, there is no evidence of protein deficiency as an independent phenomenon. Where calorie rations were adequate or nearly adequate, protein deficiencies cannot be supposed to have been serious, and where total rations were inadequate the situation could have been remedied only by an over-all increase in consumption. Hence, total protein intake seems to repre-

TABLE VIII

CALORIES DERIVED FROM MILK, CREAM, EGGS, CHEESE AND MEAT PER CONSUMPTION UNIT PER DIEM AND PERCENTAGE DERIVED FROM MILK

Country	Prewar		1941	
	Calories	Percentage derived from milk	Calories	Percentage derived from milk
Finland	905	64	620	74
Netherlands	665	50	670	66
Germany	710	40	610	57
Norway	830	40	145	100
Baltic States	1060	37	—	—
France	—	—	550	63
Belgium	705	37	445	66
Czechoslovakia	630	44	635	62
Poland	530	27	275	49

sent an aspect of calorie intake fluctuating with the general level of consumption: where calories are adequate the proportion of proteins seems to suffice to meet demonstrated physiological requirements, if not optimum requirements.

Considering the proportion of animal proteins in the diet, the chief problem lies in the milk supply, for it is possible to construct diets meeting all known nutritional requirements on the basis of whole-grain bread, fruits, vegetables and milk. Still, it should not be entirely forgotten that rapid or drastic changes in old dietary habits may meet great consumer resistance and react unfavourably on indi-

vidual comfort and morale. Thus, while a decrease in meat and egg consumption, for instance, may appear relatively inconsequential when judged by physiological criteria, it renders the diet more dull, more monotonous and less appetizing. The lack of appetite may in turn reduce intake and indirectly cause deficiencies both quantitative and qualitative. The digestion of food depends largely upon a diet that meets the usual criteria of taste in each country. The table below has been drawn up to show the number of calories derived

TABLE VIII (*Continued*)

1942		1943		1944	
Calories	Percentage derived from milk	Calories	Percentage derived from milk	Calories	Percentage derived from milk
505	85	535	86	660	70
615	67	500	76	500	78
570	61	550	64	520	67
360	100	360	100	360	100
490	70	410	72	410	72
490	70	465	74	480	70
400	74	420	70	415	71
570	69	520	70	485	74
195	64	—	—	—	—

from the foods yielding animal calories. It should not be assumed, however, that all calories in the table are proteins; some are derived from fat and carbohydrates. Though the figures are thus subject to reservations and are at best highly approximate, they suggest the prevalence of distinct trends during the war years.

The decrease in animal consumption necessitated by the shrinkage in the total food supply, is unmistakable, as is also the increase in relative dependence upon milk as the most economical means of converting a given feed supply into animal food fit for human consumption.

Analysis of the mineral content of the diet is beset with even greater uncertainties. Mineral salts are found in minute quantities in most foods, and vary even in the same food with season and local conditions; averages for whole food groups, based on standard tables of mineral content, may mean little or nothing. Moreover, accepted standards appear on the whole generous when compared with demonstrated need, and contain a considerable—often apparently arbitrary—margin of safety. Fresh vegetables and fruits which are an important source of minerals are generally unrationed, or only partially rationed. However, of the numerous minerals needed for the growth and functioning of the body, nutritionists have attached special importance to calcium, phosphorus and iron, as being the elements most frequently deficient in actual diets. Calcium and phosphorus are required for the development of teeth, bones and soft tissue, and both seem to fulfill certain regulatory functions: thus calcium seems to regulate heart beat and helps the clotting of the blood.

The richest sources of both these minerals are milk, cheese, eggs, vegetables and fruit. An adult male is supposed to require a minimum of 0.45 grammes of calcium per day, but optimum intake may be as much as 1 gramme a day. The Committee on Food and Nutrition of the American National Research Council recommends 0.8 grammes, with doses for children and pregnant women relatively larger. Phosphorus is needed in minimum doses of 0.88 grammes per adult male a day; and optimum requirements may be 50% higher. In terms of actual foods, the daily optimum requirement of calcium of an adult male is contained on an average in 830 grammes of milk, 1500 grammes of oatmeal, 300 grammes of broccoli leaves, or 2000 grammes of whole wheat; maintenance rations would represent about half of these amounts. Optimum requirement of phosphorus is contained in 320 grammes of whole cereals or 1200 grammes of broccoli flower buds.

The richest normal sources of calcium are milk and milk products, particularly cheese. Hence where milk consumption has been maintained at some 400 grammes per consumption unit the minimum requirements are covered from this source alone and extra quantities have been derived from other sources. Milk and cheese rations supplying minimum needs appear to be quite common, with the exception of eastern Europe, the Balkans and Italy. Considering the further fact that more whole bread was consumed than formerly and that consumption of vegetables generally increased, there seems no *a priori* reason to assume that the relative supply of calcium de-

creased on an average; while absolute deficiencies naturally developed where calorie rations were below requirements, there is no evidence that calcium deficiencies as such were a serious independent source of malnutrition during the war. The situation with respect to phosphorus seems to have been similar: milk is relatively a less rich source of this mineral than of calcium, but whole cereals are relatively more rich. The need for iron, used in the formation of hemoglobin in the blood, is less certain, being far greater for women and children than for adult males. Deficiencies, however, are more easy to spot and remedy, and there is no evidence that lack of iron, apart from general calorie deficiencies, has been a serious problem.

The difficulties of analysis of mineral content are multiplied in the case of vitamins. Vitamins have caught the popular imagination, and there has been a tendency to overestimate their importance, at the expense of the sufficiency and composition of the diet as a whole. Research is still going on as to optimum requirements, but usual standards appear generous on the whole when compared with demonstrated need. It is even more difficult to estimate vitamin than mineral content of food actually consumed. It should be remembered that actual content of vitamins is affected to a very appreciable extent by the length and manner of storage, the method of preparation, and so on. Only the chief vitamins will be considered in the following pages.

Ascorbic acid (vitamin C) prevents scurvy, and is essential for growth and maintenance of teeth, bones and the capillary walls. It is contained chiefly in fruits, berries and vegetables, including potatoes. Vegetable and potato consumption has increased on an average, and where calories have been adequate there is reason to assume that intake of vitamin C has been on the whole larger than before the war. This was no doubt true in Germany and Czechoslovakia. Deficiencies (not unknown even before the war) developed, generally in winter-time, in countries such as Norway, where fresh vegetables were scarce, and locally among the poorer sections of the city population in countries where legal rations failed to supply the necessary calories. But such deficiencies were counteracted in many countries by distribution of ascorbic acid to children and by utilization of such naturally rich sources as wild berries and dried rose hips.

Thiamin (vitamin B or B₁) prevents beri-beri and is essential for growth, maintenance of appetite, and for the efficient utilization of dietary carbohydrates. It is common in many foods, both animal and vegetable (whole cereals, beans and peas are good sources), and the

general increase in the milling percentage helped to increase the relative supply in the diet, so that there is no reason to assume that deficiencies were greater than before the war except in cases where the calorie level was inadequate. It is impossible here to analyze accurately deficiencies of other water-soluble vitamins such as riboflavin and niacin, but there is no evidence to show that their lack presented an independent nutritional problem.

Among the fat-soluble vitamins, vitamin A and its precursors are important for growth, the maintenance of healthy skin, of vision in darkness, and of resistance to infection. Most important sources are milk, butter, eggs and fish-liver oil, on the one hand, and green or yellow vegetables on the other. Muscle meat, bread, fats and potatoes are negligible as sources, and there is risk of severe shortages in countries unable to maintain fairly high levels of consumption of either dairy products or fresh vegetables, or both. It should be remembered, however, that margarine has generally been fortified with vitamin A (as well as D). As most countries maintained vegetable consumption at fairly high or even increased levels, there is no reason to assume that general deficiencies of vitamin A developed, except locally as a result of general insufficiency in calories. The most serious situation arose in the urban centers and in wintertime, the season of lowest supply of both dairy products and vegetables.

Vitamin D prevents rickets and is essential for the growth of healthy bones and teeth and the utilization of dietary calcium and phosphorus. It may be formed in the body under the influence of the ultra-violet rays in sunshine, so that serious deficiencies are likely to develop chiefly in countries with long sunless winters where the diet is short of milk, dairy products and fat sea fish. Children in Germany were supplied free with synthetic vitamin D, and deficiencies seem on the whole to have been limited to the low-ration areas.

B. Countries in Which Rationing Was Partial

A number of countries—Roumania, Hungary, Serbia, Croatia and Denmark—either did not feel the necessity or lacked the means of instituting total rationing and therefore left one or more of the staple foods free, or applied rationing only in a few of the larger cities. Except for Denmark, however, information reproduced here is at best highly approximate. In Denmark bread, sugar and fats were rationed, supplying on an average between 1500 and 1600 calories per normal consumer a day; meat, milk, potatoes and vege-

tables were free, bringing calorie intake to the level indicated by individual need. On an average, consumption was well maintained at or above 3000 calories per consumption unit per day, and the composition of the diet was good; indeed Denmark through the war remained on a diet so high as to be without a parallel in the rest of Europe.

Food conditions in the remaining countries of the group differed greatly, even before the war, from those characterizing Denmark. In these other countries, more predominantly agrarian than Denmark, agriculture was to a much higher degree concentrated on cereal production, and standards of living and dietary levels were relatively low. Except for parts of Yugoslavia there is no particular reason to assume that consumption *in toto* during the war years was much lower than before the war. Production in general was well maintained and such fall in yields as occurred in some areas was due chiefly to unfavourable weather. Livestock numbers were also relatively well maintained. Exports of food to Germany gradually drained the supplies available to city populations, although during the war itself there appeared to be no abnormal food deficiencies in Roumania and Hungary; in Yugoslavia and Albania actual warfare and the breakdown of communications caused serious starvation in some areas.

C. Summary of Conclusions

Reviewing the evidence for German-dominated Europe presented in this chapter, it is obvious that conditions varied not only from country to country but also between the consumer categories in one and the same country. General conclusions based on broad averages, therefore, are bound to be to a certain extent misleading, and great care is needed to avoid over-simplification and false conclusions.

Farmers as a class were in general little affected by rationing; critical food shortages arose mainly in the urban areas whose populations had to carry far more than their proportionate share of the fall in national food supplies. The average level of consumption depended on (a) the size of the official rations; (b) the extent to which they were made available in the shops; (c) the purchasing power of incomes; and (d) additions from non-rationed sources, including the black market. It is impossible to give strict numerical estimates of these factors except for (a). Still, such evidence as has become available to date seems to indicate that contributions from the black market generally exceeded deficiencies caused by (b) and (c).

Therefore it seems permissible to draw from the data under (a) certain broad conclusions at least as to the relative position of the urban population in the different countries.

According to these criteria it appears that the calorie level was maintained at or slightly below 3000 calories a consumption unit a day in Denmark, Germany, Bulgaria, Czechoslovakia (the Protectorate of Bohemia-Moravia), Roumania and Hungary. This level was on the whole slightly lower than pre-war, but was not physiologically deficient. In Belgium, Finland, the Netherlands and Norway, rations apparently represented some 2300-2800 calories per consumption unit a day. These figures are lower than pre-war and as much as 20% below normal requirements, but they do not on the whole indicate a critical shortage of calories, though more or less severe partial shortages occurred, particularly among the city people too poor to patronize the black market. In the Baltic States, Slovakia, France and Italy rations seem to have represented between 1500 and 2300 calories or thereabouts, to which were added black-market provisions, particularly important in the case of France and Italy. Where such additions were not forthcoming in any significant amount, however, the rations were too low to permit full working capacity and health. In Poland, Greece, parts of Yugoslavia and Albania distribution was very irregular; consumption fell for shorter or longer periods even in some agricultural regions to levels of semi-starvation; in some periods, especially in Greece in 1942, famine prevailed.

The absence, however, of statistically measurable calorie deficiencies does not imply that the diet was adequate in other respects. It is natural that in wartime the struggle to obtain enough calories to prevent starvation tends to overshadow the less urgent problem of obtaining a diet so composed as to maintain also optimum health and efficiency. But when wartime diets such as those described above are compared with standards of physiological requirements, it is important to remember that diets in all respects adequate in nutritional composition even in peacetime were the exception rather than the rule. In Europe fully adequate diets were to be found only in certain Scandinavian and northwestern regions, so that considering the situation of the Continent as a whole, it would appear that the deterioration in the composition of the diet was less marked than is often assumed. Broadly speaking, administrators had profited from the teachings of modern nutritional science, and avoided many mistakes committed during the first world war.

In the first group of countries enumerated above the diet became gradually more and more vegetable in composition. But since milk consumption was fairly well maintained, it is not certain that the nutritional efficiency of the diet decreased. Although the diet (except in Denmark) contained less fat, meat and eggs than is consistent with variety and palatability, and this shift gave rise to considerable discomfort, there is no evidence that the diet became much poorer in essential minerals and vitamins than before the war; indeed, the intake of these elements, owing to the increased consumption of vegetables, seems in some cases actually to have increased.

The quality of the diet in the second group of countries enumerated above was not greatly different from that in the first. But as the number of calories available per consumer was lower and less regular, and the distribution less uniform, it is natural that there developed a number of absolute shortages, not only of calories, but also of proteins, minerals and vitamins. Serious deficiencies, however, were on the whole limited to the poorer sections of the urban populations. As one moved from this middle category to the third group of countries, mainly in eastern and southern Europe, the problem of quality became almost completely subordinated to that of quantity. The diet became almost wholly vegetable, and the calorie intake was so low as to give rise to absolute deficiencies of almost all essential nutrients. Insufficiency of calories became synonymous with malnutrition, and so long as the calorie intake could not be lifted to more adequate levels, a discussion of the quality of the diet would be more or less academic.

II. *The U.S.S.R.*

Rationing data comparable with those discussed above are not available for the U.S.S.R. The German invasion resulted in a severe curtailment of the Russian crop production. The occupied territories comprised some of the richest agricultural districts usually yielding a surplus to the rest of the country. In 1941 and 1942 the country lost its best yielding winter wheat belt, its principal sugar beet regions, and much of its oil seed area;¹ it has been estimated that, on a *per caput* basis, grains harvested in 1943 did not exceed 80% of the pre-war normal.² Such a deficit could not be covered by a mere

¹ *World Food Situation, 1946*, page 103.

² *The Food Situation in Soviet Russia, 1943/45, World Grain Review and Outlook, 1945*, by Helen C. Farnsworth and V. P. Timoshenko. Food Research Institute, Stanford University, California.

reduction of grains used for feeding purposes, in spite of a great reduction in livestock numbers,¹ and the reduction of grain supplies affected diets the more severely as it has been estimated that normally at least 75% of the calories for human consumption were derived from cereals.² Neither pre-war stocks nor lend-lease imports sufficed to make up for the deficiencies of home-produced supplies.

The decrease in the supplies of crops and animal products in the free portion of the U.S.S.R. was partly compensated for by potatoes and vegetable products, the supply of which was larger than usual,³ and it is reported that the majority of people existed chiefly on a diet of black bread, boiled potatoes and cabbage.

The system of distribution, however, was less egalitarian in the U.S.S.R. than in most other countries. Rationing covered the staple foods, and the rations were sold at fixed prices within reach of ordinary wage earners. In addition there existed a legal free market in which privileged groups able to afford the very substantial prices could employ their superior purchasing power in acquiring extra necessities and luxuries. The food supplies on the open market were derived chiefly from the share in kind received by collective farmers after the division of the harvest.⁴ Ordinary rationed consumers were divided into four categories: manual workers, office workers, adult dependents and children under 13. The following table shows the *per caput* weekly rations of bread and cereals in 1944 in grammes:⁵

	Bread	Cereals
Manual workers	4535-5245	455
Office workers	3145-3855	340
Adult dependents	2100	225
Children	2100	285

For the same period Gruliov and Lederer⁶ estimate that the aver-

¹ These losses included 7 million horses out of a total 12 million in the invaded territory; 17 million cattle out of 34 million; 20 million hogs, 27 million sheep and goats, and 110 million head of poultry. Cf. *World Food Situation, 1946*.

² M. K. Bennet, "Wheat in National Diets," *Wheat Studies*, October 1941.

³ According to information in *Bolshevik* (March 1944 No. 5) quoted by Timoshenko, the 1943 potato acreage under Soviet control was 30% larger than in 1938 and vegetable acreage 80% larger. Yields were satisfactory.

⁴ Open market prices were 800% to 15,000% above the ration prices. Cf. *Russia Fights Famine*, by Leo Gruliov and Sidonie K. Lederer, Russian War Relief, Inc., New York 1944.

⁵ *Neue Zürcher Zeitung*, February 22nd, 1944, quoted by Timoshenko.

⁶ *Op. cit.*

age Russian diet based on both free and rationed foods added up to the following quantities per week per head :

	Grammes per week	Calories per day
Bread	3175	1180
Cereals	590	295
Meat	400	150
Potatoes	1050	120
Sugar	85	45
Vegetables	800	40
Cheese	Irregular	—
Total	—	1830

According to this estimate the calorie intake *per caput* was about 1800 a day, higher for workers and lower for children and dependents.¹ These rations were about as high as in Germany in the same year; but they were nutritionally of an inferior composition, containing almost no milk, milk products, fats, or eggs, and only insignificant quantities of meat.

III. *The United Kingdom and the European Neutrals*

The situation in this group of countries was throughout the war more favourable than in Continental Europe and the U.S.S.R. The greater availability and elasticity of supply was reflected in the systems of rationing, which were more liberal and more flexible than those on the Continent. In the United Kingdom rationing arose from the necessity of husbanding shipping space needed for war imports and from certain restrictions on the supply of foreign currency. But throughout the war the supply of food remained adequate and it was possible to maintain stable rations. The British system was characterized also by greater adaptability to individual needs and less differentiation than on the Continent. In fact, Britain maintained throughout the war an unlimited total consumption of calories of vegetable origin, though certain vegetables and fruits were scarce and others normally imported (*e.g.* oranges and bananas) were almost unobtainable. But all consumers could buy as much bread and potatoes

¹ Gruliov and Lederer estimate that "the Russian wartime diet provides about 1600 calories a day . . . and 90% of the calories are derived from bread, cereals and potatoes." The 1800 calorie estimate above includes food purchased in the open market.

as they liked, and the authorities could construct rationing with the chief aim of maintaining for all a diet adequate in nutritional elements other than calories.

In the interest of economy it was necessary to reduce consumption of foods requiring much shipping space, land and labour in favour of those requiring less. Thus the policy was to increase home production of bulky foodstuffs—cereals, potatoes, vegetables and milk—and use the shipping space for imports of concentrated foods such as fats and meat. Milk consumption, in fact, increased by some 28% (in 1943) compared with pre-war. Land under wheat increased by 82% and all cereal crops by 86% ; potato crops increased by 116%. Rationing then included protein foods, milk and fats. The need for quality foods varies less between different groups of consumers than does the need for energy foods. For this reason it was possible to adopt a uniform basic ration of the foods referred to above. Meat, bacon, cheese, fats, sugar and jam were rationed at so much per head of the population (*cf.* Appendix) ; these rations, together with the free foods, were adequate to meet *average* physiological requirements. The introduction of whole bread and the fortification of margarine with vitamins A and D also served to safeguard the nutritional adequacy of the ordinary diet. Nevertheless, it was recognized that the basic rationing system was not capable of taking into account *all* the requirements of special groups, and their extra needs were met through a number of special schemes superimposed upon it. The most important of these schemes were :

(1) *Communal feeding.* While on the Continent workers engaged in heavy or night work received extra individual rations of certain foods—and in Germany workers had to surrender coupons to obtain meals at industrial canteens—Great Britain adopted the policy of leaving needed or useful additions to the diet outside the ration. Communal feeding took the following chief forms : (a) industrial canteens in factories and at the mines and docks ; (b) school canteens for school children ; (c) "British Restaurants" for the public.

Industrial canteens were introduced early in the war. Employers of 250 persons or more were required to operate canteens in their establishments, but even smaller employers could be required to set them up where special circumstances made it desirable. In some cases a number of smaller firms pooled their resources and operated a single canteen. In other cases the workers had the use of near-by "British Restaurants."

Some school canteens were in operation before the war, but their

number was greatly expanded and it was the policy to supply all school children with one well-balanced meal a day. The Board of Education paid a minimum of 70% and a maximum of 95% of the cost to local authorities supplying these meals. In case of need they were supplied to the children at reduced cost or free.

“British Restaurants” were sponsored by the Ministry of Food with the assistance of the local authorities. They arose originally as an emergency programme, but became gradually a fixed part of wartime living. Their object was to serve a hot nutritious meal at about 1/- a head, which is a price within the reach of every worker. These restaurants were open to the general public, but many local authorities gave priority to workers during the rush hours. By the end of the war more than 2000 “British Restaurants” were in operation, serving on an average about 600,000 meals a day. It was the policy of the Ministry to encourage their establishment in areas where there were many small factories without independent canteens.

The Ministry of Food granted the canteens and the “British Restaurants” the supplies necessary to provide the right kind of meals. School canteens were registered as priority catering establishments and received such special allowances as were required. Canteens and catering establishments feeding industrial workers likewise received higher allowances of rationed foods than ordinary cafés, hotels and restaurants. The canteens were classified in two categories, the first catering to heavy workers, the second to ordinary workers. The first received a meat allowance double that of ordinary establishments, the second one and a half times as much. Increased allowances of sugar, butter, marmalade, margarine, cooking fat, cheese and preserves were granted to both categories, and to the “British Restaurants” entitled to priority supplies of unrationed foods such as cake, cocoa powder, starch, food powders, coffee essence and shredded suets.¹

(2) *Distribution schemes.* Children of pre-school age—as well as nursing and pregnant mothers—did not generally benefit from the communal feeding. These categories needing foods rich in first-class proteins, minerals and vitamins, received special rationing cards which entitled them to extra quantities of protective foods: milk,

¹ The feeding of miners presented certain difficulties, but much progress was made in providing pit-head canteens at the larger and “Snack Bars” at the smaller mines. The programme for feeding miners envisaged the setting up of 856 canteens to provide meals for 680,500 men, or 98% of all miners in the country. Seamen and certain classes of fishermen obtained rations on the liberal scale laid down in the Merchant Shipping Act.

eggs, and certain fruit and fruit juices. The National Vitamin Scheme granted either free or at low cost a supply of essential vitamins to those who needed them most. The best-known and most important of these schemes, however, related to milk. Children under one year of age had a priority right to two pints of milk a day, and nursing or expectant mothers and children 2-5 years of age of 1 pint a day at 2 d. a pint. The milk was supplied free if the parents' income fell below a certain minimum. Children of school age received milk under the "milk-in-schools" scheme inaugurated before the war; this system was extended to include, in principle, all school children. The ration of non-priority consumers varied with the season of the year; in winter the allocation varied between 2 and 3 pints weekly. In the case of eggs priority consumers received 4 times as many as ordinary consumers, and the price was kept down by means of subsidies.

(3) *Point Rationing.* A third means of directing the distribution of a number of foods which though desirable are not essential additions to the basic diet was the "point-rationing scheme" introduced in 1941. It was employed particularly in the case of commodities the supply of which was too small or too erratic to permit of specific rationing. Each consumer received a card containing a certain number of points, and the commodities were "priced" not only in ordinary currency but also in points. The system rendered it possible to include or exclude foods as the situation demanded, and through the double mechanism of price and point changes demand could be steered in the direction desired. At the same time, the system left a considerable latitude of choice to the consumer. By an empirical use of point and price changes the Ministry of Food was able to introduce and popularize food items—often obtained through lend-lease—which were previously unknown to the British public or were in little demand.

It would have been useless, however, to lay down a theoretically perfect system of rationing if a part of the population did not possess the income necessary to purchase the legal rations. The British system, therefore, which aimed at establishing a healthful minimum diet for all, required an intimate co-ordination of price policy with social policy in general. We have mentioned above the milk distribution scheme and the system of school lunches, distribution of fruit juices, etc., designed to provide essential foods to special categories of consumers; the canteens and "British Restaurants" were also designed to be within the reach of all. But in fact the policy went further

than this. The Ministry of Food had virtual monopoly powers over the distribution of all imported and most home-grown foods. It fixed the price of essential foods to the consumer according to considerations of social policy. Prices were stabilized at low levels, and the difference between the cost of production and/or imports was met by the Treasury from subsidies or from profits earned on the sale of other foods. When the policy of price stabilization was introduced in the beginning of the war subsidies were already being paid at the rate of about £50 million a year. At the end of March 1945 they were running at a yearly rate of £225 million.

ESTIMATED FOOD SUPPLIES MOVING INTO CIVILIAN CONSUMPTION IN THE UNITED KINGDOM, PRE-WAR AND 1944

	Grammes per week <i>per capita</i>	Percentage change
	Pre-war	1944
Milk and milk products	334.1	+26
Meat	1189.8	-19
Poultry	266.9	-26
Eggs	212.8	+ 2
Oil and fats	397.8	-16
Sugar, etc.	824.3	-31
Potatoes and sweet potatoes	1544.0	+61
Pulses and nuts	82.9	-17
Tomatoes and citrus fruit	408.2	-31
Other fruit	815.6	-30
Vegetables	1290.1	+44
Grain products	1840.6	+17

SOURCE: *Food Consumption Levels in the United States, Canada and the United Kingdom. Second Report of a Special Committee set up by the Combined Food Board, December 1944.*

Owing to the diversity of the food distribution system it is not possible to calculate the size of family consumption. Figures, however, are available showing the food supply per head of the civilian population in 1943 and 1944, figures which can be accepted as fairly representative for the war period as a whole.

The average consumption of milk, potatoes, vegetables and bread increased, whilst consumption of sugar, animal products (other than milk) fats and imported fruits declined. The total effect of these changes on the nutritive composition of the national diet is shown in the table below, as estimated by the Combined Food Board.

It would appear from the table that calorie consumption decreased some 2% ; this decrease, however, is no doubt more apparent than real, for the entry into the armed forces of a large number of men

ESTIMATED DAILY SUPPLY PER CAPUT OF NUTRITIVE ELEMENTS
AVAILABLE FOR CIVILIAN CONSUMPTION IN THE UNITED KINGDOM, PRE-
WAR AND 1944

	Unit	Pre-war	1944	Percentage change
Calories	No.	2987	2923	- 2
Proteins	Grammes	80.3	87.4	+ 9
Fat	"	129.1	116.6	- 10
Carbohydrates	"	376.3	381.2	+ 1
Calcium	Milligrammes	683	1037	+52
Iron	"	12.4	16.34	+31
Vitamin A	Int'l units	3831	3773	- 2
Vitamin C	Milligrammes	101.3	123.3	+22
Thiamin	"	1.17	2.0	+70
Riboflavin	"	1.56	2.1	+34
Niacin	"	17.5	19.7	+13

SOURCE: *Food Consumption Levels in the United States, Canada and the United Kingdom, etc.*

in their most active age obviously decreased the physiological requirements of the remainder. The food supply of some 2900 calories a day per head (even allowing for waste in distribution and preparation) is more than adequate to bring consumption per consumption unit above the 3000-a-day standard of normal requirements. There was a moderate decrease in consumption of fats (and animal proteins); but the intake of minerals and vitamins increased sharply owing mainly to the larger consumption of potatoes and vegetables and the increased milling extraction of cereals. In general, therefore, the level of nutrition enjoyed by the civilian population was better than before the war, which, of course, does not exclude a somewhat decreased standard in the highest income groups. With the possible exception of vitamin A and riboflavin, the diet met intake requirements based on the full "recommended dietary allowances" of the United States National Research Council; it met in all respects the Council's "average restricted dietary allowances." "But," adds the Special Joint Committee, "the position may be marginal, however, in several instances, even on a restricted basis, since the supply figures make no allowance for the substantial losses of some nutrients, notably ascorbic acid and thiamin, which occur in preparation and cooking." The chief shortcoming of the nutritionally improved national wartime diet has been monotony and lack of palatability, rendering it in many cases difficult to maintain sufficient individual appetite; but the general improvement in public health in spite of the wartime

stresses in other respects testifies to the success of the British food distribution system.¹

Sweden, which before the war was almost self-sufficient in food and enjoyed a high level of consumption, did not suffer any serious food shortages. Unrationed milk, potatoes and (most of the time) some free meat and fish, served as budget regulators permitting the population to satisfy their total needs for calories in a nutritionally well-balanced manner. The ratio of animal to vegetable foods was on the whole little disturbed and remained not far from the high level of 40:60. The foods rationed were distributed according to the German pattern of specific and differential rationing; indeed rations of bread, fats and meat were more highly differentiated than in any other country. Little attempt seems to have been made to utilize the relatively favourable supply situation, as was done in the Anglo-Saxon countries, by introducing point rationing and other devices intended to safeguard consumer's free choice.

The supply situation in Switzerland was somewhat tighter than in Sweden, the former country being ordinarily more dependent on imported food. Bread was rationed, and of the staple foods potatoes alone remained free throughout the war. On the other hand, rationing was gradually rendered more and more flexible by the introduction of ingenious modifications of the German model. For instance, in the summer of 1943, when it had been found that the lower income groups could not always afford to buy the full rations of the more expensive foods, consumers were given the choice between two alternative rationing plans: A and B, Plan B containing relatively more cheap but equally nutritive foods than Plan A. Card B gave the right to larger rations of bread, cereals, milk and cheese, but to no meat, and to smaller fat rations. Moreover, coupons for certain foods could be legally substituted, at specified rates of exchange, for coupons of other foods. Thus, 250 points of meat gave the right to 100 grammes of cheese or 100 grammes of peas, beans, etc.; 100 grammes of butter could be exchanged for 200 grammes of cheese; and one litre of milk gave the right to 100 grammes of cheese. These modifications, coupled with the exchange privilege, invested the Swiss rationing system with a flexibility otherwise unknown outside of point rationing; it limited the need, inherent in specific rationing, of differentiation by consumer category.

Conditions in Ireland did not necessitate rationing of more than a few imported foods, and in Portugal domestic food production

¹ Cf. Chapter VI below.

(which before the war rendered the country 90% self-sufficient in cereals and 100% in fats) remained at or above pre-war levels up to 1943, when serious drought reduced crops and necessitated rationing of bread. By the end of the war consumption was running at about 95% of pre-war, but inadequate administrative controls caused the city dwellers to suffer the whole impact of decreased supplies. Spain, before the Civil War, was almost self-sufficient in food, though, it is true, at a low standard of consumption. As an effect of the Civil War, area sown and productivity were decreased to such an extent that Spain became dependent upon imports of staple foods. Total supplies, according to the estimates of the United States Department of Agriculture, corresponded by the end of the war to some 2300 calories a person a day, as compared with some 2650 before the Civil War. The reduction, however, was unequally distributed, falling particularly heavily on urban consumers. Their official rations (not always available) corresponded to something less than 1200 calories per head, but unrationed foods (meat, dairy products, fruits and vegetables) and additions from the black market may perhaps have permitted an urban consumption of about 2000 calories, i.e., for groups able to purchase enough of these relatively expensive foods.

IV. Rest of the World

The Americas, New Zealand and Australia, ordinarily surplus producers of food, did not suffer from general shortages during the war. If these countries rationed some foods, the reasons were different from those applying to Europe. In the United States after Pearl Harbor, the need for rationing arose, in spite of expansion of total food production, as a result of fuller employment and higher wages of the employed persons, coupled with an additional demand from the armed forces, and for lend-lease and other exports. In order to prevent an undue rise in the prices of animal products—the absolute and relative demand for which increased as a result of the rising purchasing power—and also to maintain a balanced agricultural production, meats, butter, cheese and fats were rationed, as well as certain products which happened to be in short supply, such as sugar and coffee. Sugar, indeed, was the first commodity to be rationed and is the only one which at the moment of writing remains so. Coffee rationing was introduced as a measure to save shipping space, and was abandoned in July 1943. Canned goods were also rationed,

not because of a lack of food materials, but as a means of relieving pressure on the canning industry and reserving supplies for the armed forces and for lend-lease. There was no need to ration energy foods, fresh fruit, vegetables or milk (though the sale of cream was restricted); the free foods alone were then sufficient to secure to everybody the needed calories and the chief elements of a sound nutrition. Hence there was little need for a differential rationing, and animal foods and canned goods were distributed by an egalitarian point system. Each person (in addition to sugar coupons) received two sets of points: red and blue. The red points were used to buy fats (including butter), cheese, meat and meat products. Each commodity was "priced" in points as well as in money. Consumers were left with a wide choice of commodities and could plan their purchases with due regard to individual needs and preferences. Moreover, one could by choosing margarine instead of butter, less choice cuts of meat instead of steak, and so on, considerably vary the total quantities purchased of both fat and meat. This arrangement had the advantage of a differential rationing without its disadvantages; total demand was kept down whilst rationing interfered but little with the consumer's free choice. Families were favoured by this arrangement, owing to the relatively smaller calorie need of children, but meals in restaurants remained free throughout. Similarly, the blue points gave the right to buy canned goods of different kinds, the

APPARENT CIVILIAN CONSUMPTION OF MAJOR FOOD COMMODITIES
1935/39 AND 1942/45

(Pounds per year per head)
NAWAB

	Average 1935-39	1942	1943	1944	1945 (Preliminary)	Percentage change 1935/39-1945
Grains	208.8	221.9	226.4	225.2	228.2	+ 9.3
Potatoes	130	118	133	126	130	+ 0
Sugar	96.5	86.2	80.3	89.0	73	- 24
Meat and meat products (incl. poultry)	146.1	163.1	167.7	176.5	159.1	+ 8.9
Fats (incl. butter)	48.0	47.9	45.7	44.7	41.5	- 14
Milk	801	839	764	788	793	- 1
Cheese	5.5	6.3	5.0	5.0	5.7	+ 4
Eggs	37.3	38.9	43.1	43.9	48.8	+ 31
Fruits (fresh)	138.5	129.8	120.9	144.8	146	+ 5
Other fruit and fruit juices	25.7	29.6	26.0	27.4	34.0	+32.3
Fresh vegetables	235	251	236	254	264	+12
Canned and frozen vegetables	31.5	39.7	34.4	35.1	44	+39.7

"point price" of which (as was also true for meat and fats), being changed from one rationing period to another. The nature of the point-ration system renders it impossible to determine the actual size of individual rations; but the table above shows the development of the actual consumption per head of the civilian population of the most important food groups.

This table shows that except for sugar and fats (purchased as such) the wartime diet was as high or higher than in peacetime. Increases are particularly noticeable in regard to fruit, vegetables, eggs and meat—all foods of high nutritive value. In consequence the American diet in war came to be higher in energy value, and nutritionally better composed than in peace. The table below analyzes the composition of the civilian consumption pre-war and 1944, per capita per day.

Calories were well above 3000 a day per head and exceeded the 1944 average by some 4%. The intake of animal proteins, already high in peacetime, had increased by 14%, and total fat intake (as opposed to fats purchased as such) increased by 8%. The intake of essential minerals and vitamins had very substantially increased; the diet met in all particulars intake requirements based on the full National Research Council (United States) "recommended dietary allowances" of nutrients.

The situation in Canada was not greatly different from that in the United States. Rationing covered sugar, meat, fats, tea and coffee, but meat rationing was discontinued in February 1944. The

ESTIMATED DAILY SUPPLY PER CAPUT OF NUTRITIVE ELEMENTS AVAILABLE FOR THE UNITED STATES, PRE-WAR AND 1944

Item	Unit	Pre-war	1944	Percentage change
Calories	No.	3236	3367	+ 4
Animal Protein	Gm.	51.0	58.3	+14
Vegetable Protein	"	37.8	41.3	+ 9
Fats	"	129.0	139.4	+ 8
Carbohydrates	"	429.7	428.1	0
Calcium	Mg.	885	1017	+15
Iron	"	14.2	18.7	+32
Vitamin A	I. U.	6804	7389	+ 9
Ascorbic Acid	Mg.	105.4	122.2	+16
Thiamin	"	1.77	2.61	+47
Riboflavin	"	1.97	2.61	+32
Niacin	"	15.7	221.4	+36

figures below show estimated yearly supplies moving into civilian consumption in pounds *per caput* pre-war and 1944.

Except for sugar, consumption of important foods remained fairly stable or increased. Meat consumption was up by nearly 30%;

**ESTIMATED FOOD SUPPLIES MOVING INTO CIVILIAN CONSUMPTION
IN CANADA, PRE-WAR AND 1944**

(*Pounds per year per head*)

	Pre-war	1944	Percentage change
Grains	206.9	221.8	+ 7
Potatoes (including sweet)	195.9	190.2	- 3
Sugar	103.3	89.6	-13
Meats, game and fish	145.4	185.0	+28
Fats (including butter)	41.2	42.8	+ 4
Milk	58.1	69.5	+20
Eggs	30.5	36.8	+21
Vegetables and fruits (including nuts and pulses)	217.0	263.2	+21

SOURCE: *Food Consumption Levels, etc.* The Combined Food Board: Washington, 1944.

milk, eggs, fruit and vegetables by about 20%. The table below analyzes the nutritional composition of the diet per head per day of the civilian population.

The quality of the diet was uniformly improved. Calories were up 8%, animal proteins 23%, and most minerals and vitamins increased between 15 and 30%. The only point on which there is question as

**ESTIMATED DAILY SUPPLY PER CAPUT OF NUTRITIVE ELEMENTS
AVAILABLE FOR CIVILIAN CONSUMPTION IN CANADA, PRE-WAR AND 1944**

Item	Unit	Pre-war	1944	Percentage change
Calories	No.	3182	3435	+ 8
Animal Protein	Gm.	50.9	62.5	+23
Vegetable Protein	"	39.3	43.1	+10
Fats	"	123.7	141.3	+14
Carbohydrates	"	426.9	434.8	+ 2
Calcium	Mg.	879	1050	+19
Iron	"	15.0	19.7	+31
Vitamin A	I. U.	6162	7154	+16
Ascorbic Acid	Mg.	60.1	69.9	+16
Thiamin	"	1.96	2.48	+27
Riboflavin	"	1.93	2.33	+21
Niacin	"	17.4	21.5	+24

SOURCE: *Food Consumption Levels, etc.* The Combined Food Board: Washington, 1944.

to the adequacy of the diet in terms of the "recommended dietary allowances" of the United States National Research Council is ascorbic acid (vitamin C).

The Australian diet ordinarily is among the highest in the world and was little if at all affected by the war until 1942. Tea rationing was introduced in March of that year, followed by sugar rationing in August. Sugar was rationed at one pound weekly per head. Butter rationing was introduced in June 1943 as a result of the necessity of making increased exports available to the southwest Pacific war zone and of maintaining supplies to the United Kingdom. Rations were fixed at about 225 grammes weekly. Similarly, the increased demand for the armed services and exports necessitated meat rationing from January 1944. Meats were divided into four groups which were so arranged that the average quantity of meat which could be bought for two coupons was $2\frac{1}{4}$ pounds, or about 1 kilogramme. As all persons over 9 years of age had two and children under 9 one coupon weekly, rations averaged $2\frac{1}{4}$ and $1\frac{1}{8}$ pounds, respectively. Sausage, edible offals, poultry, fish, cheese, eggs and bacon were not rationed, but some of these items became scarce. By and large, however, the Australian diet remained ample in quantity and high in quality. The same applied, broadly speaking, in New Zealand, where tea, sugar and meat were rationed.

Conditions in the Middle East varied considerably from one area to another, and conditions prevented the introduction of general systems of rationing. Governments attempted on the whole to control procurement and prices of grains, which, together with livestock products derived mainly from sheep and goats, were the mainstay of the diet. In normal times the countries in this area were self-sufficient in food, with the chief exception of Palestine. Egypt remained on the whole self-sufficient and counteracted the reduced yield per acre of cereals (due to lack of fertilizers, etc.) by a reduction of cotton acreage and an increase in cereal acreage. Turkey, normally self-sufficient in food, had in fact a not inconsiderable export surplus except for the years 1941 and 1942, when crops were short owing to unfavourable weather. A certain shortage was noticeable in the urban centres, however, during the bad crop years necessitating rationing of bread. As already indicated, Palestine depended largely on imported food, a dependency which, in spite of efforts to grow more food, was not decreased; population increase between 1935 and the present period was exceptionally heavy, amounting to not less than 45%. Cultural, social and economic differences

between population groups rendered a uniform scheme of rationing impracticable, and the differentiation of systems in this relatively small area affords a good illustration of the administrative problems to be overcome in introducing consumer rationing in Eastern and Middle-Eastern countries. All persons were subject to restriction; the large urban conglomerations comprising in 1943 approximately 650,000 people were rationed directly on the "point system"; the rest were rationed indirectly on the basis of food allocations to each town, village or settlement. Both systems, while differing in composition, were correlated as to total quantities allocated. The figures below show the average consumption per head for all categories of consumers for important foods in grammes per week in 1937/39 and in 1943:

	<i>Flour</i>	<i>Macaroni</i>	<i>Sugar</i>	<i>Jam</i>	<i>Halawa</i>	<i>Meats</i>
1937-39	1980	10	350	15	10	315
1943	1715	15	185	20	15	11.9

Iraq increased food production during the war; paddy rice production, for instance, increased from 180,000 to 320,000 short tons, and exportable surplus of barley reached 200,000 to 300,000 tons a year; a surplus of livestock was also available. Iran, normally self-sufficient in food, used to show exportable surplus. In the first years of war crop failures created food shortages in the urban centres, but the situation gradually returned to nearly normal.

French North Africa usually exports food, mainly wheat and wine, and continued to do so until 1942; since that time a series of crop failures has necessitated considerable imports. Consumers in towns who were obliged to live on the rations suffered from considerable shortages.

Among the countries in the Far East, India was normally almost self-sufficient in food, imports amounting to only about 3% of the total cereal production. The diet was almost exclusively vegetable in origin, and in the absence of a food buffer constituted by rational animal husbandry, some areas at least were normally on the verge of famine; malnutrition was the rule rather than the exception in the whole country. Primitive agriculture cannot easily provide for rapid population increase—amounting in the case of India to about five million a year—and a relatively small disturbance either in supply or in distribution can easily lead to disastrous results. The vast majority of the population are subsistence farmers living on some 50

million small holdings; a comparatively insignificant decrease in deliveries from each farm may drastically decrease the supply of food available for the city population. Several factors contributed to upset this precarious balance in 1942. The normal rice import of about a million tons a year from Burma, French Indo-China and Siam was cut off. While total harvest was close to average, political unrest, fear of invasion and inflation clogged up the system of distribution, leading to withholding and hoarding of supplies by farmers and speculators. The result was the Bengal famine in 1943, reported to have caused the death of about a million and a half persons. Famine conditions prevailed in the summer and early autumn, particularly in Calcutta and other large towns, to which destitute villagers and farm labourers streamed in search of relief. With the aid of certain imports of cereals, the crisis had passed by the end of 1943. The famine, however, had far-reaching consequences in respect of future food policy. The Government of India offered a basic food plan according to which the Central Government assumed formal responsibility for food distribution, rationing of cereals was introduced in the towns, and attempts were made to expand production by increasing the total area under cultivation, diverting land from non-food to food crops, increasing the practice of double-cropping, extending the use of fertilizers, increasing the supply of irrigation water, and encouraging the use of improved seeds. Little progress was made, however, except for diverting land from cotton and jute to food production, particularly millet; some success was experienced as regards extension of double-cropping. These measures roughly sufficed to produce foods for domestic needs, but the country remained unable to care for her expanding population in case of even a moderate decrease in crops.

The food situation in China, as in India, is characterized by the strong population pressure on available resources. People exist on a low dietary level, mainly of local products, and a crop failure or breakdown of communications results in local famine. It would appear, however, that the war affected food production less than could have been feared. The bulk of food was consumed near the areas of production, and there was no shortage of agricultural labour. Indeed, inflation seems even to have stimulated agricultural production, and in Free China the government encouraged production by new irrigation schemes, more extensive double-cropping, insect control, distribution of improved seeds, etc. It should not be overlooked, however, that there arose severe local and temporary shortages as a result

of military operations and breakdowns of the system of transportation. The greatest shortages apparently occurred in 1943 in the Honan Province as a consequence of drought and military requisitioning. Later shortages occurred in Kwangsi, Kweichow and Honan in connection with Japanese operations.

Japan was normally an importer of food. During the war domestic production and imports tapered off. Domestic food production at the end of the war was perhaps 20-25% of pre-war and imports have almost ceased. The diet per head before the war can be estimated at about 2300 calories a day; by 1944 consumption was perhaps some 2200 calories, of which some 1600 were derived from domestic production. The situation is now further complicated by the difficulty of distribution, with the greater part of the reduction in consumption falling as usual upon the urban population. While farmers may consume at the old rate, city rations have fallen very considerably, and may now supply less than 1000 calories a day a person.

With the exception of the Argentine all countries of South America are on the balance importers of food. But during the war domestic production continued to grow, and some imports continued to be available; hence consumption was not greatly decreased and rationing was not found necessary.

CHAPTER III

THE POST-WAR FOOD CRISIS

WHILE the war was still in progress it was believed in many quarters that once hostilities ceased, food would flow abundantly from the surplus to the deficit areas, and that food habits would soon revert to "normal." Historical experience, however, has shown that the aftermath of war is often almost as bitter as war itself, and the Second World War has proved no exception. The post-war food crisis cannot be intelligently considered without some reference to the wider aspects of the food problem.

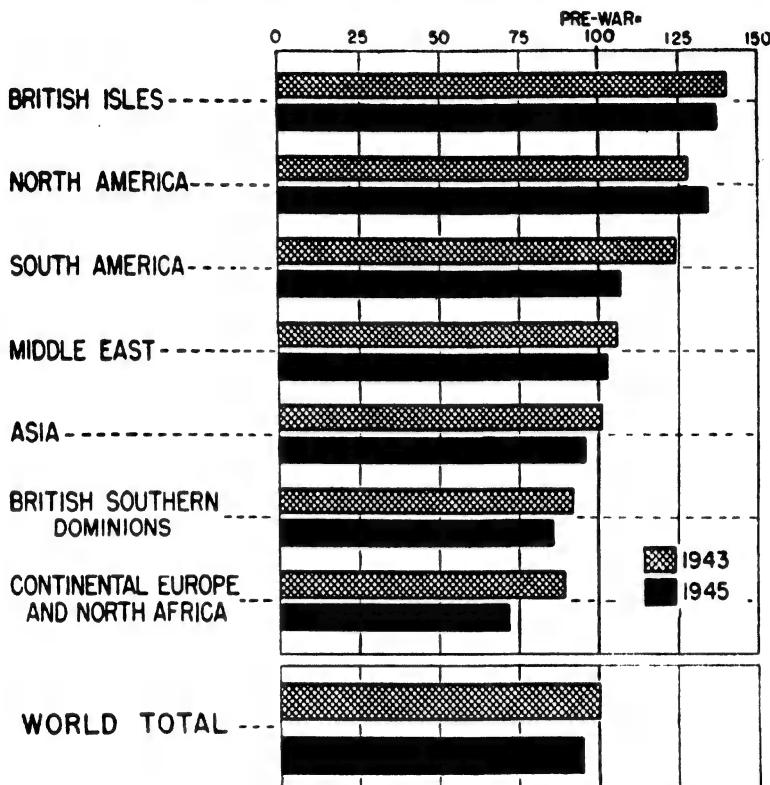
Even in normal times it is difficult to compile reliable statistics of world food production, the basic estimates being in many cases nothing more than approximations if not outright guesses subject to a wide margin of error. The accuracy of the basic data is not likely to have improved during the protracted war just ended. On the contrary, in many countries the ensuing disorganization of the civil administration has rendered the collection of precise statistics extremely hazardous, if not impossible. Especially in those countries where food shortages are most critical and where progressive inflation makes producers unwilling to part with their goods, farmers have perfected the devices of withholding supplies from their governments. Finally, in competing for the scant post-war supplies deficit countries may be inclined to paint their domestic crop situation in colours too dark rather than too bright. These reservations should be duly kept in mind in considering such estimates—at best highly approximate—as are available.

According to a report by the United States Department of Agriculture,¹ the calorie value of world food production has declined by about 5 per cent from the average just before the war; however, if allowance is made for population increase, the *per caput* production has declined by about 12 per cent. As will be seen from Diagram I, this decrease is unevenly distributed over the world.

¹ *World Food Situation 1946*, Washington, February 1946.

DIAGRAM I

WORLD FOOD PRODUCTION IN 1943 AND 1945 AS A PERCENTAGE OF PRE-WAR



^a MOST OF THE REMAINDER OF THE TOTAL WAS PRODUCED BY U.S.S.R. WHERE WARTIME STATISTICS ON FOOD PRODUCTION HAVE NOT BEEN PUBLISHED

The data here summarized suggest a practically unchanged (or slightly increased) production in South America and the Middle East; a slightly decreased production in Asia, Australia, the Union of South Africa and New Zealand, and a considerable decrease (in the order of some 20 per cent) in Continental Europe and North Africa, contrasting with a striking increase in the British Isles, which normally, however, produce only about 1 per cent of the world's total. North America is the only major producing area showing a significant increase (about one-third) over pre-war. To obtain a real insight into the seriousness of the food situation confronting the

world, not only the volume of output but also the many and difficult problems of national and international distribution will have to be considered.

Cereals—and more particularly wheat and rice—are truly the "staff of life" of mankind. As regards wheat, practically the whole exportable surplus derives from the four chief exporters (the United States, Canada, Australia and the Argentine). Production in these countries amounted to nearly 40 million tons on an average for 1935/39 against somewhat more than 46 million tons in 1945/46. The pre-war net exports amounted to about 12 million tons. It should be remarked that their wheat acreage has not increased; indeed production in all the chief exporting countries, except the U.S.A. was, for various reasons, below pre-war levels. The existence of a substantial exportable surplus was accounted for by a series of welcome bumper crops in the United States. As regards rice, the pre-war production amounted to about 200 million tons, of which about 95% was grown in Asia. Owing to the disorganization consequent upon the war, and other unforeseeable conditions, the crop in 1945/46 fell to about 168 million tons, or about 15% below pre-war. Both India and China have suffered from drought, and still greater deficits are noted in Japan and former Japan-occupied areas such as Burma, Siam and French Indo-China.

It is impossible to arrive at exact estimates of export surplus and import requirements; these are not absolute quantities but depend on a great number of partly variable circumstances, among which the most important is the standard of consumption adopted. For the purpose of illustration, however, we quote here the figures of the Combined Food Board as of March 1946. The exportable surplus of wheat for the crop year 1945/46 is estimated at about 25 million long tons (including wheat substitutes, believed to be some 1 to 1.2 million tons, mainly from the Argentine). Of this roughly half was exported during the latter part of 1945. For the first half of 1946 the estimated exportable supply amounts to roughly 10 to 12 million tons. Accepting the higher figure, and comparing it with stated requirements of 20-21 million tons, there is an estimated world deficit of 9-10 million tons. It should be noted that wheat requirements increased during the crop year as a result of the failure of the Asiatic rice crop, and that the stated requirements make an allowance of about 1.5 million tons for the expected shortfall in rice during the second quarter of 1946. (Previous estimates of some 8 million tons are exclusive of this figure.) In other words, exportable supplies

amount to less than 60% of stated requirements. It should be noted, however, that the U.S.S.R. may have alleviated the supply situation somewhat by agreeing to export 0.5 million tons of cereals to France during the spring of 1946.

The wheat situation is so much the more pivotal as practically all other staple foods are in short supply. Thus, the prospective world supply of fats and oil for 1946 is 2.8 million tons as compared with stated requirements of 4.5 million tons. Similarly, outside the Western Hemisphere lard will be in short supply owing to the reduction in world pig numbers; it is estimated that the 1945/46 world output will be about 35% below pre-war. The 1945 whaling season also proved disappointing. As regards sugar, world production in 1945/46 was about 28 million short tons as compared with an average of about 34 million tons for 1935/39. World exports are indicated at a level of about 8 million tons or at about 65% of the pre-war level.

The serious sharpening of the food crisis at the beginning of 1946 was due partly to unforeseeable circumstances and partly to the over-consumption during the first half of the crop year resulting from over-optimism. Among the unforeseen factors were the extent of drought in southern Europe, North Africa and India, and the very large fall in agricultural productivity in eastern Europe as a result of precipitate land reforms, large-scale transfers of populations, and the continued requisitioning of draught power and machinery. Nevertheless, the chief reasons for the shortage were apparent relatively early, and in August 1945, for instance, the Combined Food Board warned that "the outlook for the 1945/46 crop year at the moment could be viewed only with grave misgivings." The war had left as a heritage a serious disequilibrium between supply and demand, which could have been overcome only by a strict economy and continued food controls. But at this time important countries, in the desire to revert to "normal," hastily abandoned many of the wartime controls. The slender food surpluses—chiefly in the form of wheat—could not stand the strain of the new demand so released.

The need for calories for human consumption is not absolute. Crops are by and large (apart from waste, seed, industrial use, etc.) divided between human and animal consumption. A number of crop calories, however, fed to animals return only a portion in the form of animal foodstuffs fit for human consumption. Hence, as was shown in Chapter II, when total crops decrease, human consumption may be maintained—within certain limits—by diverting feed grain from animals to humans. And in principle—if a lack of calories for

human consumption was to be avoided—the decrease in world crops necessitated a liquidation of livestock and a more vegetarian human diet. The crop situation in 1945/46, instead of justifying a general increase in livestock, clearly indicated a continued liquidation as the only means of averting famine. In order to avoid misunderstanding, however, it is necessary to recall the limitations of such a policy. The population of such countries as China and India, and now also of large parts of eastern and southern Europe, exist on a diet almost completely vegetable in origin. No further liquidation of livestock is either feasible or desirable in such areas; a decrease in crop supplies is translated almost directly into lack of calories for human consumption, and the deficit cannot be made up otherwise than through increased imports. And the more animal populations have decreased already, the smaller are the relative gains through further liquidation. It is dangerous to reduce a meagre stock of draught animals, and after the reduction of pig and poultry populations has been driven to a certain point, a more drastic reduction of milk herds is an expedient that should, as far as possible, be avoided. Milk is not only essential to the health of future generations (and relatively cheap in terms of vegetable calories used in its production), but cattle consume to a large extent hay, waste, and other feed not suitable for direct human consumption. A reduction of cattle and draught animals also threatens future crops by the consequent reduction of manure and draught power. Indeed, the Fourth Session of the UNRRA Council, meeting in Atlantic City in March 1946, wisely recommended that where livestock numbers had been drastically reduced efforts should be made to rehabilitate livestock herds, in spite of shortages of human food, by diversion of land to their feeding which was not directly suited for crops. It is then to countries in which the ratio of animal products to animal foods is relatively high that the Combined Food Board addresses itself when it points out that "livestock recovery has proceeded at a faster rate than was justified," and continues to point out that "livestock numbers will have to be reduced appreciably if human beings are not to go hungry." It is useful to distinguish here between deficit and surplus areas.

While consumption levels, as will be seen later, were barely maintained or declined in eastern Europe, Germany and Italy, food consumption increased in western Europe. But more seriously, on the chance of expectations of further imports which could not be realized, flour extraction rates were lowered and restrictions removed on the feeding of cereals (other than wheat) to animals, with the result

that increasing livestock populations made inroads upon the insufficient cereal supplies. Tardily, in the spring of 1946, endeavours were made to repair these mistakes, the results of which could not, of course, be undone. The UNRRA Council in March passed a series of resolutions summarizing steps which if they had come in the autumn might well have prevented the crisis. The recommendations may be summed up under the following headings: the elimination of all avoidable food waste; the diversion of maximum quantities of grain to direct human consumption and consequent reduction in livestock numbers; the raising of the rates of extraction in the milling of cereals; and the diversion of fats from industrial use to food use. In addition, procurement of foods from farmers was to be rendered more efficient, and rationing continued.

Such measures, feasible in the surplus areas, are not likely, however, to yield appreciable results in the deficit areas, where waste is already rare, inflation rampant, and administration of necessity not at the peak of efficiency. In particular, the farmers demand an increased supply of consumers' goods as an inducement to part with their food. Though it is still premature to undertake a survey of the results of such recommendations, a few examples of the way in which countries meet the crisis are in order. In the spring of 1946 the rate of extraction in the milling of cereals has been generally increased to levels as high as or higher than those prevailing during the war. Sweden, in addition to a food export of about 400,000 tons during the last two years, has voluntarily given up import contracts for about 100,000 tons of wheat and rye. But it is in the United Kingdom—the greatest importer of food in the world—that the conservation policy has been most energetically pursued. Not only has she continued all the wartime controls of food production and distribution—and even in some cases lowered wartime rations—but she has also voluntarily scaled down her import requirements. At the beginning of the crop year she had set her requirements at 6.9 million tons of cereals, but is now accepting 4.8 million tons—a reduction of nearly 30%. In addition, she has since the summer of 1945 exported 800,000 tons of cereals to the Continent of Europe, drastically reducing the bulk stocks held by the Ministry of Food. A nation-wide campaign has been started to save bread—still unrationed—and the milling extraction rate has been raised. Feed rations to animals stand at a sixth of the pre-war average. In France bread was again rationed in January 1946, and the extraction rate of cereals has been raised to 90%. But, by and large, the possible savings by these and similar

measures are not large, and their full effect cannot be felt during the current crop year.

The deciding factor in the world food balance is rather to be sought in the surplus countries, and particularly in the United States of America. Unfortunately, in spite of recent energetic efforts, it is highly doubtful whether these countries will be able to meet their export commitments, not to speak of surpassing them. The surplus countries (except the Argentine) introduced rationing of animal foods during the war, which resulted in some check on the expansion of animal production. Yet domestic consumption rose above pre-war levels, particularly in the United States, where production was further expanded to meet the needs of animal foods of Britain and of the armies in the various theatres of operation. Had it not been for the four successive bumper crops of wheat, satisfaction of the wartime demand for feeding grain would have left the world at the end of the war without any appreciable surplus of food. Still, after the war when the world's heavy needs for wheat (not to mention quality foods) had become apparent, the eating away by animals of the scarce cereal supplies continued at an accelerated rate. Rationing of food, except sugar, was rapidly lifted in the United States, and the consumption of animal food continued above the wartime level. No less than 175 million bushels, or close to 4 million tons of wheat were diverted to feeding purposes during the last half-year of 1945. The total pig crop in 1945—86,714,000—was practically the same as in 1944 (or some 10% above the 1934/43 average); but pigs were fed more heavily than usual, the marketing weight of hogs in the late winter of 1946 being on an average about 20 pounds higher than during the corresponding period of 1945. A larger proportion than usual of steers slaughtered was of high quality, indicating heavy feeding. The quality of grain and other concentrates fed per milk cow was at a record level, while total heads continued to be fairly stable. Production of eggs rose to 55.218 millions in 1945 as compared with an average for the 1934/43 period of 40.026 millions. To a great extent, according to the U. S. Department of Agriculture, the extraordinary demand for livestock feed "is traceable to high rates of feeding, which are traceable in turn to a favourable livestock-feed price ratio."¹ In other words, to a failure to raise the prices of grains for food in time to prevent a serious supply situation from developing, or alternatively, to reduce prices of animal products

¹ United States Department of Agriculture, Production and Marketing Administration Press Release, March 16th, 1946.

(which, however, would have necessitated the reintroduction of consumer-rationing of animal products).

By the beginning of 1946 it had become clear to all that the rate of grain consumption by livestock would render it difficult or impossible for the United States to meet her export commitments. On February 6th the President issued a nine-point programme aimed at securing the quantities of wheat committed for export. The milling extraction rate for wheat was raised to 80% ; the use of wheat for the manufacture of beer and alcohol was prohibited; inventory controls were prepared; priorities were established to clear the way for moving the huge quantities of wheat and other foods involved in export ; and measures were taken to reduce the feeding of wheat to livestock. The public was asked to economize in the use of wheat and avoid all waste of food in general. The question of increasing the price of wheat was under discussion at the moment of writing. The people of the United States were in all asked to reduce consumption of grain by 40% and of fats and oils by 20%. In order to achieve these goals the President created the Famine Emergency Committee, under the honorary Chairmanship of former President Hoover, to plan and direct the steps needed to reduce domestic food consumption. It is hoped that export commitments will be met without reintroducing rationing of food or generally reducing livestock numbers. It should be noted, however, that the 1945/46 export quota represents a one-time effort; by the end of the crop year it is estimated that stocks will have fallen below safe minimum levels and cannot be counted upon to make up in the next season for any shortage in the current crop.

The situation in the other supplying countries is not much more hopeful, even though Canada and Australia have taken rather stringent measures to prevent the expansion of domestic consumption of animal products. The Canadian Government has introduced a food-saving campaign, and taken action to reduce inventories to lowest possible levels. Meat rationing was reintroduced in Canada in October 1945, on a lower scale than during the war. Butter rations were set at about half those of the war period, while such products as bacon and cheese are kept in short supply. The wheat released to distilling is reduced by 50%, and Canadian millers are permitted to grind for home consumption only 90% of the amounts used in 1945, thus indirectly leading to an increased extraction in milling. It is anticipated that the export surplus of wheat will have completely disappeared by the end of the 1945/46 crop year. During the war

the United Kingdom lost the Continental food imports and cut down her own animal production, relying upon the Dominions and the United States to supply her with the needed animal products. These commitments cannot be neglected. Australia has continued her food control measures, but available supplies were reduced by the drought in the previous crop year in which she lost 20 million sheep. The question of getting wheat out of the Argentine is largely tied up with imports of coal and machinery; for lack of fuel her railroads were burning grains during the war, a practice now discontinued.

Considering the situation in the surplus countries as a whole, there is very little reason to expect that they will at best be able to meet more than their commitments for the present year. Moreover, by the end of the 1945/46 crop year surplus stocks of food will have disappeared, and the world will have to exist on its current production. Though at the moment of writing the prospects are for another good wheat crop in the United States, the seriousness of the situation cannot be denied. It is still impossible to foresee the outcome of the world crop as a whole. While it may reasonably be hoped that we shall be spared another season of widespread drought, there is no reason to believe that productivity of agriculture, particularly in Europe, will recover rapidly. The disorganization of transport and administration and the lack of fertilizers, machinery and draught power are cumulative in effect. A serious crop failure, then, in the absence of any reserve stocks, could well be catastrophic in its effects; and grave as the situation remains for the rest of the 1945/46 crop year, the dangers looming ahead for the following year are even more disquieting. Indeed, to prevent the development of an even worse situation than the present one, by the end of the 1946/47 crop year, it is now high time to carry into effect, to the fullest extent possible, such food conservation measures as were recommended at the recent Atlantic City meeting of the UNRRA Council and quoted above.¹

¹ Since this volume went to the press an international conference summoned by the United Nations Food and Agriculture Organization has met in Washington, D.C. (May 20th-27th, 1946) to consider urgent food problems. Urging the adoption by all nations of an emergency programme of food conservation, it recommended *inter alia*: (a) raising the extraction of wheat flour to a minimum of 85% where lower rates are applied; (b) stretching the supply of wheat flour by at least 5% admixture of flour from other grains or from potatoes; (c) limiting the use of grain for alcoholic beverages and "other non-essential purposes"; (d) maximum diversion of grain and potatoes from feed use to human consumption while giving priority to milk herds and draught animals in whatever feeding of coarse grains that may be necessary; (e) reduction of grain-absorbing quality.

meat production; (f) reduction of food waste; (g) reduction of Government stocks of food; (h) taking steps rendering it possible to put direct rationing of bread into effect at short notice, should this prove necessary. These recommendations, it will be observed, are essentially a restatement of the latest UNRRA resolutions discussed above.

The Conference recommended further (1) the institution of an international research and information service to survey and report quarterly on the world food situation, and (2) the creation of an International Emergency Food Council to carry on the work of the Combined Food Board and to be composed initially of representatives of those nations—some twenty in number—now represented on that Board and its committees.

CHAPTER IV

LEVELS OF FOOD CONSUMPTION, 1945/1946

FOR several reasons it has proved impossible to give at the present time data on post-war rations and consumption as detailed as those given in Chapter II for the war period. But fortunately there is now coming forward an increasing flow of estimates indicative of the levels of calorie consumption in different countries; these are used below to show the repercussions of the food crisis on food consumption. It must be emphasized, however, that these estimates are of varying value and are generally quite approximative. Not only is it difficult in most cases to arrive at correct estimates of available supplies, but expressing foods in terms of calories involves the exercise of arbitrary judgment to a considerable degree; hence a fairly wide margin of error must be taken into account.

Table I summarizes two authoritative estimates of calorie consumption levels in Europe. The first, undertaken by the United States Department of Agriculture, relates to the autumn of 1945; separate figures are given whenever possible for the total population and for non-farmers. The second set of figures derives from the Emergency Economic Committee for Europe; it shows on the one hand "normal-consumer" rations in December 1945. (The reservations to which such figures are subject have been discussed in some detail in Chapter II, to which reference should be made.) It shows on the other hand weighted average rations of all consumer groups, plus estimated additions from non-rationed sources. It thus attempts to show the total diet of non-farmers, which is naturally higher than "normal consumer" rations. The table shows finally the "predicted" average diet for non-farm consumers. The countries, in so far as the data permit, have been arranged in falling order of consumption. All figures are *per caput*; in order to arrive at figures per consumption unit (indicative of physiological needs) they should be increased on an average by about a fourth.

A first group of countries—Denmark, the United Kingdom,

Sweden and Switzerland—have a calorie consumption not significantly below their high pre-wartime averages. Though, as shown in Chapter II, the composition of the diets has changed during the war, there is no reason to assume that they are nutritionally much inferior to the pre-war diets. Owing to a more equitable distribution of available supplies, the poorer strata of the population may even be better off than previously. It is not anticipated that these countries—in spite of voluntary sacrifices made by consumers in favour of those in less fortunate countries—will experience serious difficulty in pulling through to the next crop, even though the calorie level may be slightly cut for some time.

A second group of countries can be distinguished which includes some nations of western Europe—Belgium, France, Luxembourg and the Netherlands—plus Norway and Czechoslovakia. In these countries average consumption per head of the whole population amounted, according to the United States Department of Agriculture, to about 2500 calories in the autumn of 1945. A net allowance of this order would equal more than 3000 calories per consumption unit. The system of distribution, however, was varyingly successful in achieving an equitable sharing of available resources. In France farmers were consuming more or less at a normal rate, while the city population was much less well off. The normal consumer in Paris, for instance, had rations estimated at some 1400/1500 calories, to which should be added free foods and black market purchases. It is unlikely, however, that the poor could afford substantial additions, and we have a picture of relative plenty side by side with real privation.

As in the case of France, considerable variation in consumption levels is observed in the Bohemian and Moravian provinces of Czechoslovakia. While farmers' consumption on the whole is probably close to the pre-war standard, the urban (non-German) population received a diet estimated at 1840 calories per day per head for the three four-weekly rationing periods ending on February 3rd, 1946. The rations of Germans are estimated at 1050 calories. No direct data are available for Slovakia; domestic production allows only some 500/600 calories a day for the urban population, which is hence almost completely dependent upon imports to obtain a satisfactory diet. The difference between urban and rural diets seems to be less in Belgium, the Netherlands and Norway. In the autumn of 1945—when average national consumption in all three countries was about 2500 calories per day per head—the non-farm consumption

TABLE I

ESTIMATED CALORIE CONSUMPTION IN EUROPEAN COUNTRIES 1945-46
(Calories per head per day)

Country	U. S. Department of Agriculture		
	Pre-war	Second half of 1945	
		Total population	Non-farm population
Denmark	3200	3000	2900
United Kingdom		2800/2900 ¹	
Sweden	3000	2800	
Switzerland	3300	2500	
Netherlands	2800	2600	2500
Norway	2900	2500	2400
Belgium	2800	2550	2500
Czechoslovakia	2700	2500	2200
France	2800	2400	1400 ²
Luxembourg		2500/2600	2400
Greece	2450		
U.S.S.R.			1800
Finland	3100		
Portugal	2100	1900	
Spain	2650	1900	
Austria	2850		less than 1800
Albania	2000	1800	
Yugoslavia	2700		
Bulgaria	2650		
Germany:			
U.K. Zone			
U.S.A. Zone	2850		
U.S.S.R. Zone			1750
Italy	2550		1550
Roumania	2750		
Hungary	2600		less than 1500
Poland	2550		

¹ As of June 1, 1946.² Partial rationing.³ Adults only.⁴ Parks only.⁵ Normal consumer.⁶ *New York Times*, April 10, 1946.

SOURCES: U. S. Department of Agriculture: *World Food Situation, 1946*. Washington, D. C. February 1946. Emergency Economic Committee for Europe: *The Winter Food Position in Europe*. (Report by the Sub-Committee on Food and Agriculture). London, 1946.

was estimated at 2500 calories in the Netherlands and Belgium and 2400 in Norway. These rations would, if some normal waste is eliminated, permit a consumption not far from the needed 3000 calories per consumption unit a day. While the composition of the diet has naturally deteriorated since before the war, particularly as regards animal food, its level seems high enough to maintain health

TABLE I (Continued)

ESTIMATED CALORIE CONSUMPTION IN EUROPEAN COUNTRIES 1945-46
(Calories per head per day)

Country	Emergency Economic Committee for Europe		
	1945 (Dec.)		Spring 1946
	"Normal consumer" rations	Non-farm diet: weighted average of all ration groups	Predicted average for non-farm population winter 1946 ¹
Denmark	2850	2850	over 2500
United Kingdom	2850	2850	2850
Sweden	3000	3000	3000
Switzerland	2300		over 2500
Netherlands	2230		2100
Norway	1590		2000/2500
Belgium	2040	2270	2000/2200
Czechoslovakia	1170/1510		less than 2000
France	1560 ^a		1500/2500
Luxembourg			2000
Greece	1100 ^a	1800	1700
U.S.S.R.			less than 2000
Finland	1130		less than 2000
Portugal	1120		1500/2500
Spain			less than 1500
Austria	1550		less than 2000
Albania		1800	2000
Yugoslavia			2000/2500
Bulgaria			2200/2400
Germany:			
U.K. Zone	1550		1500/2000
U.S.A. Zone	1500		1500/2000
U.S.S.R. Zone	885/1415		less than 2000
Italy	800/ 900	1400/1600 ^a	1400/1600
Roumania	circa 600		less than 1500
Hungary	500/1000		less than 1500
Poland	1130 ^a		less than 2000

and efficiency. Such serious shortages as existed—particularly in the big French towns and in parts of Czechoslovakia—were the result of maldistribution rather than of over-all shortages of supply.

The outlook for the remainder of the crop year is highly uncertain. As stocks are used up the countries become more dependent upon continued imports, and prediction of consumption levels becomes a gamble on imports. Still, it seems likely that the Netherlands, Belgium and Norway will succeed in maintaining non-farm consumption above 2000 calories a day. In France the situation is more uncertain. This is also true of Czechoslovakia, where maintenance of

consumption at about the level just indicated is contingent upon fulfilment *in toto* of the UNRRA programme plus further imports, mainly of cereals and fats, outside that programme. Some cuts are probably inevitable in most if not all of these countries, but a truly critical situation is not expected to develop in their case with the possible exception of Czechoslovakia and urban France. It should be remembered, too, that a temporary deficiency in calories is less serious than a protracted one.

A third group of countries including Greece, Finland, Portugal and Spain hovered, in the autumn of 1945, on the critical level between just enough and starvation, the average consumption per head of the total population being rather less than 2000 calories a day. Consumption of the non-farm population in Greece was down to about 1700 calories a day in January 1946, the maintenance of this level depending entirely upon UNRRA assistance. The normal consumer ration at the end of 1945 was down to little more than 1100 calories, indicative of the critical position of the urban population where extra food was not obtained from the thriving black market. The maintenance of even the meagre rations prevailing requires continued imports. In Spain, owing to the lingering effects of the Civil War, the disorganization of transport and the lack of fertilizers, and owing, in addition, to drought in 1945, food production remained at a low level (perhaps some 70% of the average for 1931/35). The low rations are irregularly available, and may have to be further reduced before the new harvest. The situation in Portugal is perhaps less precarious, but maintenance of rations depends upon imports.

The position in the Balkans and the countries of eastern Europe is more difficult to assess; it is, however, by all indications exceedingly serious, and starvation or semi-starvation is common. The Danubian countries were normally food-surplus areas; production was relatively well maintained during the war years but was drastically reduced in 1945. These countries are predominantly agricultural; hence the reduction of total supply falls particularly heavily on the city populations. In Bulgaria the situation would seem critical mainly in the tobacco-growing regions, where the level of consumption may be less than 1500 calories a day. In Roumania, where the official ration supplies only some 600 calories a day, the city population may receive in all some 1300/1400 calories a day or less. Official food stocks, it was feared, would be exhausted early in the spring of 1946. In Hungary starvation appears to be common, and runaway inflation complicates the problems of food procurement and distribution. The city food

rations amount to some 500/1000 calories a day, according to locality, to which should be added unknown contributions from the black market. In Poland, on the other hand, domestic supplies would seem to permit of a ration of some 1300 calories a day for the city population, which is dependent on UNRRA help and other imports for additions to that basic figure. No information is available for the Baltic States and the U.S.S.R. Recent grain exports from the latter country suggest, however, that its food crisis has been passed. Official rations are reported to be better fulfilled, sugar rations and bread rations for children have been increased, and prices in the free market were recently reduced.

An over-all picture of food conditions in Germany is difficult to obtain owing to the division of the country into four zones of occupation. In the occupation zones of the western allies, it was estimated in the autumn of 1945 that domestic supplies would allow an average consumption of about 1500 calories per person of the total population, and about 1100 for the non-farm population for the year as a whole. December levels in this area were probably some 1750 calories for non-farmers, a level that could be maintained only by imports or excessive withdrawals from domestic stocks. Until November 1945 normal consumer rations in all occupation zones remained below the 1550 calorie level which the Combined Nutrition Committee (composed of experts from the United States, the United Kingdom and France) considered insufficient for the maintenance of health for more than a short period. The rations were highest (1550 in December 1945) in the British zone, followed by the American zone (1500 calories). The rations (not always honoured) were considerably lower in the French and Russian zones, where distribution also was rendered more uneven by transport and storage difficulties. The normal consumer rations varied between 800 and 1200 calories a day. The total urban consumption was estimated in December 1945 at 1200 calories a day in the Russian and 1600 calories in the American zone. Black market additions, while varying greatly, were estimated on an average at 300/400 calories in the Russian and 200 in the American zone. Rations for the rest of the crop year cannot be maintained at these levels without imports on a scale much larger than was originally planned. Thus, average daily rations in the British zone in April 1946 were reported cut to 1040 calories, and in the American zone to 1275 calories.¹

The position in Austria is critical, but it is difficult to obtain a clear

¹ *New York Times*, March 18th and 30th, 1946.

picture of conditions as a whole. In October 1945 normal consumer rations amounted to 800 in the Soviet, 1490 in the American, 1425 in the British and 1445 in the French zones. For the country as a whole, non-farm consumption, including black market additions, was estimated at less than 1800 calories a person. But even this level could not be maintained without large imports; during the spring the situation has further deteriorated, and the ration in Vienna is now reported to be some 800 calories a day. The total non-farm consumption in Italy during December 1945 does not appear to have been as much as 1550 calories a day on an average, and "normal consumer" rations supplied some 820 calories a day. Even these rations depend for their maintenance on large-scale imports of wheat.

Summarizing the situation as of January 1946, the Emergency Economic Committee for Europe estimates—though admittedly on the optimistic side—that "after taking into account all home-grown and imported food supplies available or in sight," 140 million people "will have to continue to live on a diet which provides an average of less than 2000 calories a day." Of these approximately 100 million may receive less than 1500 calories.¹ The remaining 40 million may be expected to receive 1500/2000 calories.² These estimates exclude Albania, Turkey and the U.S.S.R.

Diets of between 2000 and 2500 calories appear in prospect for the non-farmers in Belgium, Bulgaria, the Netherlands, Norway and parts of Yugoslavia (perhaps some 21 millions). Average diets above 2500 calories will be available to non-farmers in Sweden, the United Kingdom, Denmark and Switzerland, and for non-farmers in all countries not specified above. Threatened with famine or semi-starvation are thus about 150 million people, or not far from 40% of Europe's little more than 400 million population (exclusive of the U.S.S.R.). It is as yet, however, too early to foresee the outcome of the present crisis; though large-scale suffering and privation seem unavoidable, energetic measures still seem capable of averting catastrophe on a large scale.

Reliable information for Asia, the other great food-deficit area, is even more difficult to obtain than in the case of Europe, and we have

¹ The non-farm populations of Austria, Eastern Slovakia, Finland, Germany, Hungary, Italy, Roumania, and possibly Spain. Further, the farm population in the tobacco-growing districts of Bulgaria, and German residents in Czechoslovakia.

² The non-farm populations of France, Bohemia, Moravia and Western Slovakia, Greece, and certain districts of Yugoslavia. A bare 2000-calorie diet may be in store for non-farmers in Luxembourg and possibly Portugal.

to rely mainly on broad estimates and guesses. It is expected that the combined effects of drought in the north and tidal wave and drought in the south will reduce the crops in India to considerably below normal. In the absence both of stocks and of a food buffer provided by husbandry, this shortage of cereals, estimated for India as a whole at some 8 million tons, is therefore at once translated into a shortage of calories for human consumption. In India in the spring of 1946 some 130/140 million non-farmers received a ration of 9.6 ounces of cereals (270 grammes) daily; self-suppliers were allowed a pound a day. In order to maintain the rations for non-farmers the Indian Government is asking for 4 million tons during 1946. On April 3rd it was announced that India had been allotted 1.65 million tons of cereals by the Combined Food Board, and that shipments will be at the rate of 14,000 tons a day. It is reported that rain has slightly improved the crop prospects, but it is stated that India requires a further 2 million tons during the first half of the next crop year in order to avoid famine conditions.

It is particularly difficult to arrive at reliable estimates of food needs and supply in a country as large as China, where normally large sections of the people live on the verge of starvation. Since the cessation of hostilities most of China has been reunited under one government, with a reported population in 1940 of 481 millions. According to reports by the United States Department of Agriculture, food production in the 1945/46 crop year was slightly below the average of recent years. Pre-war China imported about 1 million short tons of wheat and flour and 0.7 million tons of rice; but Formosa exported about the same quantity to Japan, while net exports of beans (largely soya beans) amounted to 2.3 million tons in addition to 0.4 million tons of coarse grains. Difficulty of transport, however, results in above-pre-war import requirements. Acute deficiency areas have been reported chiefly in the province of Kwantung and certain areas in the interior such as Honan. Import requirements in excess of UNRRA aid are estimated at 1.3 million tons of cereals, to meet mainly the need of the large cities and the special areas in short supply.

We have pointed out previously that Japan's food situation was already critical at the end of hostilities. Owing to the failure of the 1945 rice crop, the cessation of almost all imports, the five million population increase during the war, and the return of soldiers from overseas, the situation has gone from bad to worse. The non-farm population may obtain some 900 calories a day from domestic

sources, while farmers may consume at a rate of some 2300 calories, adding up to a national average of some 1400 calories a day, compared with a pre-war consumption of about double this figure. Merely to bring the national diet up to 1800 calories a day a person would require a yearly import of some 4 million tons of cereals. The Allied Supreme Command has granted the Japanese Government permission to import food, but no figures are available as to actual imports. In view of the food crisis it is unlikely that very substantial quantities have been or will be made available during the present crop year.

Food production in the Philippines declined severely during occupation and liberation. With food imports, mainly from the United States, the country is likely to tide over the present crisis. During the first quarter of 1946 food allocations from the United States amounted to 66,000 tons of rice, 3500 tons of meat, 8700 tons of condensed and evaporated milk, and 2000 tons of sugar.

The political unrest makes the food situation of the Netherlands East Indies very difficult to assess. It has been estimated that the calorie value of the chief staple crops in the present crop year is about 15% smaller than the average for 1936-1939.

In the rest of the world conditions do not on the whole call for special comment. It should be added, however, that due to prolonged drought in the Union of South Africa shortages have arisen in cereals, meat and dairy products necessitating considerable imports.

CHAPTER V

POST-WAR RELIEF

IN AUGUST 1940 Prime Minister Churchill—in a speech in the House of Commons—promised that after the defeat of the enemy the peoples of Europe should receive food and relief. A few months later Great Britain set up a Committee of Surpluses with the purpose, *inter alia*, of acquiring stocks of relief goods. In September 1941 there was created in London—on British initiative—an Inter-Allied Committee on Post-War Requirements, which in the following year and a half compiled detailed schedules of post-war import requirements of the occupied areas in Europe.¹ Meanwhile, various inter-departmental committees in the United States had been actively considering post-war needs. Soon after Pearl Harbor these activities were centralized in a special Office of Foreign Relief and Rehabilitation Operations within the Department of State. Under its aegis actual operations were carried out in Tunisia in 1943; feeding programmes were launched, refugee camps opened, and health services provided.

But as the invasion of Europe drew nearer the need for broad international action and co-ordination of effort in bringing together deficit and surplus areas became more apparent. After consultations between the American and British Governments, the former presented a draft agreement for a Relief Organization to all the United Nations. With some modifications incorporating suggestions from interested governments, the proposal was adopted on November 9th, 1943, by representatives of 44 United and Associated Nations meeting in Washington, and thus was established the United Nations Relief and Rehabilitation Administration (UNRRA). Its member states were later increased to 48.

¹ In 1941 a Middle East Relief and Refugee Administration, with headquarters in Cairo, was also set up to care for Polish and Greek refugees who had escaped from the Germans. Its activities were later taken over by UNRRA.

The purposes of the new organization were broad and sweeping. According to Article I of the agreement, they were:

(a) "To plan, co-ordinate, administer or arrange for the administration of measures for the relief of victims of war in any area under the control of any of the United Nations through the provision of food, fuel, clothing, shelter and other basic necessities, medical and other essential services; and to facilitate in such areas, so far as necessary to the adequate provision of relief, the production and transportation of these articles and the furnishing of these services . . ."

(b) "To formulate and recommend measures for individual or joint action by . . . member governments . . . for the purpose of achieving an equitable distribution of available supplies."

(c) "To study, formulate and recommend . . . measures with respect to such related matters . . . as may be proposed by any of the member governments . . ."

The UNRRA Council, composed of one representative of each member state, is the central policy-determining body; it reaches decisions by simple majority vote. Between sessions a Central Committee (composed of representatives of the U.S.A., the United Kingdom, the U.S.S.R., and China) makes policy decisions of an emergency nature, subject, however, to reconsideration by the full Council. Two Regional Committees, one for Europe and one for the Far East, composed of representatives of the member governments in each area, are competent to make recommendations to the Council for their own area. There are in addition a number of technical committees to advise the Council on specific questions, e.g. the Committee on Supply, the Committees on Agriculture, Displaced Persons, Health, etc. Executive authority is vested in the Director General, who together with his staff is responsible for the carrying out of the directives given by the Council. Headquarters were established in Washington, D.C.; the European Regional Office was placed in London. Numerous regional offices and country missions have also been established; by the beginning of 1946 UNRRA's staff comprised almost 17,000 officials, the greatest number ever employed by any single international organization. UNRRA's activities are ex-

pected to cease by the end of 1946 in Europe and three months later in the Far East.

UNRRA is financed by the governments of its non-invaded member countries, whose initial contributions were fixed (in Atlantic City) at approximately 1 per cent of the national income for the year ending June 30th, 1943. In August 1945 the Council recommended a second contribution from each such country on the same basis. The total funds of the organization are estimated on this basis to reach 3.77 billion U.S. dollars. As of December 1945 governments had appropriated or preliminarily approved \$3.6 billions, of which \$2.9 had actually been made available.

Large as these sums are, they proved modest when compared with needs; assistance therefore had to be made highly selective. Relief was limited to such liberated areas only as lacked the foreign exchange needed to pay for their own imports (though the Director General has authority to provide health and welfare services to all liberated areas). Hence, UNRRA's large-scale activities came to be restricted in fact to a relatively small group of liberated countries, limited relief programmes being authorized later for some ex-enemy countries, notably Italy, Austria and Finland.

Next to the problem of geographical limitation of aid came that of allocating resources to restricted groups of goods and services. Since UNRRA came into being some two years before it became possible to render large-scale relief, there should have been ample time to collect requisite information, draw up plans and develop procedures in advance of actual operations. Requirements were determined in practice on the basis of estimates submitted by claimant governments. The regional committees for Europe and the Far East first determined, each for its own area, theoretical norms of needs of different commodities or commodity groups. The difference between total needs thus calculated and estimated local supplies was taken to represent—subject to minor adjustments—theoretical import requirements. It so happened, however, that when added together these theoretical requirements of the countries in question exceeded the financial resources of UNRRA. Therefore the programmes had gradually to be scaled down until they came within the limits of budgetary resources. It is not necessary to enter into the details of this process, which was carried out in conjunction with interested governments. National relief budgets began to emerge which could be translated into actual programmes of operation, and in the course of the process countries naturally eliminated less urgent

requirements and placed increasing emphasis on food. The following figures show the estimated quantities and value of supplies by main groups shipped by UNRRA from all sources to liberated areas up to the end of 1945:

	Total	Food	Clothing, textiles and footwear	Agricultural rehabilita- tion goods	Industrial rehabilita- tion goods	Medical and san- itation good
Tonnage shipped (thousands of long tons)	3,959	2,663	188	346	738	25
Value (thousands of U.S. dollars)	681,553	316,777	173,325	46,505	116,073	28,873

According to the general procedure of determining programmes described above, Council Resolution No. 17 charged the Committee of the Council for Europe and that for the Far East respectively with the task of evolving *inter alia*, each for its area, scales of nutritional relief requirements. In Resolution No. 55 the Council adopted the theoretical scales for Europe submitted by the European Committee. These scales, in turn, were drawn up by the *ad hoc* Sub-Committee for Europe.¹

The standards evolved were declared to be in the nature of "minimum requirements which, if possible, should be introduced as soon as territories have been liberated." As a general basis for determining such minimum requirements the Committee recommended "the use of an average level of consumption of the total population of each of the countries concerned of 2650 calories (at the retail stage) per head per day for essential relief needs for the period under consideration." As regards the composition of the diet "the estimates should include sufficient quantities of milk and eggs to enable the following allowances to be made for priority groups of the populations in Allied territory:

¹ This Committee met May 5th to June 17th, 1944, under the chairmanship of Dr. Karl Evang of Norway and included representatives from Australia, Belgium, Brazil, Czechoslovakia, the French Committee of National Liberation, Greece, Iceland, Luxembourg, the Netherlands, Norway, Poland, the United Kingdom, U.S.A., the U.S.S.R., and Yugoslavia.

	Whole milk (litres per day)	Eggs (per week)
Pregnant and nursing mothers	$\frac{3}{4}$	7
Children, 0-3 years	$\frac{3}{4}$	0
Children, 4-7 years	$\frac{1}{2}$	0
Sick people	$\frac{1}{2}$	7 1 "

All in all the average diet should contain a daily allowance of 75 grammes of fat and 60 grammes of protein (of which about half should be of animal origin).² In addition the Committee looked forward to the early de-rationing of bread in liberated areas.

Although these scales are lower than "recommended allowances" for optimum health and efficiency, it was perhaps not generally realized how high they were in relation to the depleted resources of the world and also in relation to peacetime consumption. A calorie-allowance of 2650 per day per head of the population at the retail stage corresponds roughly to 3300 calories a day per consumption unit. Family budget figures also show quantities of foods purchased at the retail stage. It is of interest to compare the UNRRA relief requirements with figures of actual working class consumption before the war; available data of this kind were given in Table VI of Chapter II above.³

Except in the case of Belgium, where families before the war were reported to consume at the rate of some 3500 calories per consumption unit, the UNRRA figures are throughout higher than observed working-class consumption in peacetime. It was 2560 in Italy, 2800 in Switzerland, 2900 in Germany, 3000 in Poland and Norway, and

¹ The question whether the above quantities of milk and eggs were appropriate was referred to the technical sub-committee on health. It recommended with respect to milk the following additional rations: children 4-7 years $\frac{1}{2}$ litre a day; 8-13 years (at least) $\frac{1}{4}$ litre a day. With respect to eggs it recommended 3 eggs a week for expectant and nursing mothers, children 0-3 years, and sick people; and 1 egg weekly for children 4-7 years.

² It should be mentioned, however, that the *ad hoc* Food Sub-Committee regarded these requirements as "inadequate in respect to total protein and animal protein" for populations whose health has been seriously undermined by prolonged existence barely above the starvation level. It recommended for these groups "a basic diet providing not less than 80 g. of protein, of which *not less than 30 g. should be of animal origin*," even though the "Commission recognizes that such a diet would provide a higher level of animal protein than is customary in certain parts of Europe."

³ In comparing these figures with figures for consumption of total population, it should be kept in mind, however, that rural consumption is normally higher than urban consumption, and that the UNRRA minimum standard represents an average between the two.

did not much exceed 3200 in such relatively rich countries as Sweden and the Netherlands. The minimum relief standards were set higher rather than lower than actual consumption in peacetime in practically all the liberated areas.

In order to illustrate how the recommended animal protein allowance of 30 grammes per day per person compares with actual consumption levels a few examples may be given. It is roughly the amount contained in 200 grammes of meat, or 1 litre of milk, or 2½ eggs. The British peacetime diet is estimated to have contained little more than 40 grammes of animal proteins per head per day, and in order to maintain this level on the relatively small area of the British Isles, about three-fourths of the world's total meat exports were needed, in addition to a considerable home production. Now, at this level of consumption the animal calories in the British diet represented roughly 36% of total calories.¹ As shown in Chapter II, the animal ratio for the Continent before the war was estimated at 22%. It was shown too that during the war this ratio had been deliberately decreased so as to release crop calories for direct human consumption. Indeed, the wartime diets in eastern Europe, the Balkans and Italy were not only insufficient in quantity, but also almost exclusively vegetable in origin. Hence, the suggested minimum protein standard was not only much higher than wartime standards in the countries which later became dependent on UNRRA help, but higher also than it had been in peacetime in most European countries.²

It is obvious that the simultaneous increase in the calorie standard and of the animal ratio to levels as high (or higher) than before the war would have necessitated a corresponding expansion of world production of basic crops, additional in fact to the new needs arising from the quite considerable population increase during the war years. But world food production contracted during the war (as shown in Chapter III), and signs of impending crisis were not lacking at the time that the relief standards were being laid down. Past experience has shown that it is difficult to restore rapidly the crop production in war-ravaged countries hampered by lack of fertilizers, equipment, trained labour, etc. The only substantial food reserves upon which the world could count, then, in tiding over to more normal conditions, were at that time represented by wheat stocks in the hands of the four great exporters. These stocks had by the end of the crop year 1942/43 reached the record level of 45.5 million tons. But from this

¹ This assumes 50% of the fats to be of animal origin.

² An analysis of the fat requirements leads to substantially similar results.

time on they have been constantly decreasing, and have been sustained (at a gradually falling level) only by the exceptional occurrence of four bumper crops in sequence in the United States. Owing to increased domestic utilization of wheat, available stocks had by the end of the crop year 1943/44 fallen to 30 million tons, in spite of the fact that exports had remained below pre-war normal. The decisive factor in this development, of course, was the expanding animal production; the feeding of wheat to animals in the exporting countries skyrocketed from a pre-war average of 4.5 million tons to 18.1 million tons in 1943/44. The signs were thus unmistakable that the animal production had expanded beyond safety levels, and that adequate supplies of wheat for post-war relief hinged upon an early reversal of the trend, *i.e.* upon a general reduction of an animal ratio in the human diet. Subsequently the disequilibrium here described was further accentuated by crop failures due to unpredictable droughts, especially in southern Europe, North Africa and India.

In these circumstances it is obvious that the more successful UNRRA had been in the procurement of fats and other animal food-stuffs, the more it would have contributed to sharpening the shortage of cereals. In fact, however, it was unable to procure more than a fraction of the animal food requirements laid down in the minimum standards, which proved in a sense a dead letter. It would nevertheless be incorrect to conclude that the optimism, though tempered, of which they were an expression has not had indirect effects of some consequence. It encouraged countries in their endeavours to expand livestock numbers which may already have been too large, relatively speaking, and were eating into the precious supplies of cereals needed to prevent human starvation. It may have contributed to premature relaxation if not abandonment of rationing in certain countries and may have contributed also to delaying UNRRA from using its moral influence to combat the unbalance in the world's agriculture. As pointed out above, the resolutions indicative of a reversal of policy were only passed by the Council in Atlantic City in March 1946. It should be noted with reference to the above, however, that the determination of needs was divorced in a sense from the actual procurement of supplies to meet the recognized requirements; for the functions of allocation of supplies were centred not in UNRRA but in the Combined Food Board.

Though the powers and functions of UNRRA were originally widely conceived (*cf.* in particular sections *b*) and *c*) of Article I of the Agreement), UNRRA in fact entered upon the world scene

not as an agency for co-ordinating the world food policy, but as a claimant among several claimants for food. Ultimate responsibility for allocation of scarce commodities between countries or groups of countries continued to rest in the Combined Board and its numerous Commodity Committees. They were set up during the war to provide a common forum for formulating plans and recommendations regarding the distribution of goods available for export. The Board is composed of representatives of the United States, Canada and the United Kingdom, while the various commodity committees are composed of representatives of the main exporting and importing countries for each commodity. A representative for UNRRA attends meetings of committees dealing with foods in which UNRRA is interested on behalf of claimant countries. The Combined Board compiles from the governments concerned data on supplies, normal requirements, pre-war consumption, stocks, etc., for each scarce commodity. Neither the Board nor the committees possess mandatory or executive powers, but in fact the Board's recommended allowances are habitually accepted by the interested governments. In a sense, the Combined Board is the closest actual approximation to an overall world planning body for food that has so far emerged out of the war. Unavoidably its functions and competence tend to overlap in part with those of UNRRA.

After UNRRA has "screened" national requirements and brought the relief budgets of receiving countries into line with actual resources, it presents the claims on food for the liberated areas to the Combined Board. But this body has to take into account the legitimate claims of all countries and bring them into line with available supplies; and having its own service of official information, it is not bound to accept the UNRRA claims as presented. Thus UNRRA's food requirements during the latter half of 1945 were about 2.9 tons, and though at the time some foods (of which the chief was wheat) were not under allocation, she actually shipped 1.8 million tons, or roughly 62% of requirements.¹ But of requirements for solid meat amounting to 304,817 tons, allocations were only 63,000 tons, or 20%, and shipments a mere 18,216 tons. Requirements for edible fats were 305,820 tons, allocations 112,950 or some 37%, while shipments again were only 73,000 tons. Only as regards wheat, milk, cheese, and some minor items did shipments almost reach "requirements."

¹ For details cf. *A Statement by the Director General on the World Food Crisis*. Council IV, Document 50, C(46) 30, 18 March 1946.

As from the first quarter of 1946, when the world food crisis had reached the acute stage, UNRRA requirements rose steeply. They were estimated for the first half of 1946 at about 1 million tons of food a month. Of the 3.1 million tons required for the first three months of the year, about 1.7 millions, or about 55%, were actually made available. Requirements of wheat were 1.6 million tons, while shipments reached 1.1 million tons. It is at the moment of writing impossible to foresee the exact extent to which requirements will be met during the second quarter. But the analysis in Chapter III leaves little doubt that the gap between demand and supply is too great to be closed by such efforts as the supplying countries can undertake at short notice. By all signs the deficit in UNRRA's programme will be as large as during the first quarter or larger. The seriousness of such a situation is easier to understand if it is recalled that by the end of the crop year domestic stocks in the receiving countries will be approaching or will have already reached exhaustion. Indeed, by the end of April stocks were so low in Poland that the Government was considering diverting seed grain to human consumption, even at the risk of more acute shortages next year. Similar reports are being received from Yugoslavia, Greece, Italy and other countries.

As has been pointed out above, large-scale operations by UNRRA began in 1945; at the beginning of the year UNRRA's only active responsibilities were those exercised in assisting the military. In April, however, Allied military authorities transferred to it the responsibility for relief in several liberated countries, and during the year assistance was rendered to twelve countries, though substantial supplies began to reach the Far East only during the fourth quarter. Cumulative shipments of food up to the end of February 1946 amounted, as seen by Table I, to 3.8 million tons (indeed to less, if we exclude animal feeds and soap not generally included with human food). Substantial aid (100,000 tons or more) had been received by seven countries. At the top of the list comes Greece, which had received 1.3 million tons, or about 35% of all food shipped to that date. Seven other countries in eastern Europe accounted together for 1.8 million tons, or about 47% of the total.¹ Italy had received 381 thousand tons, China had got 279 thousand tons, and other countries together 14 thousand. These figures are small, whether compared with the needs suggested by UNRRA's own relief standards, with

¹ The detailed figures (in thousand tons) are: Yugoslavia 944, Czechoslovakia 373, Poland 278, Ukrainian S.S.R. 102, Albania 59, Byelorussian S.S.R. 45, Austria 8.

TABLE I

TOTAL FOOD SHIPPED BY UNNRA UP TO MARCH 1ST, 1946 BY COMMODITY AND COUNTRY OF DESTINATION

(Thousands of long tons)

	Greece	Italy	Yugoslavia	Czecho-slovakia	Poland
<i>Shipped from Western Hemisphere:</i>					
Grains, cereals, etc.	742	297	542	170	55
Animal Feed	38	15	37	18	7
Meat & Meat Products	7	—	15	17	16
Eggs & Dairy Products	49	23	42	20	31
Vegetables, fruits, etc.	66	16	25	16	19
Sugar, etc.	29	9	19	2	2
Fats (including soap)	13	6	21	20	25
U.S. Army Food	62	1	108	56	68
Fish and products	32	13	11	13	22
Total	1241	381	882	334	249
<i>Shipped from Eastern Hemisphere:</i>					
Total	99	—	62	39	28
Grand Total	1341	381	944	373	278

SOURCE: UNRRA Information for the Press, No. 310. Washington, April 12th, 1946.

figures of actual world trade, or with the amount of relief after the first world war, when needs were smaller than now.¹

Although total UNRRA shipments increased in March 1946—amounting in all to 1.5 million gross tons—shipments of food fell below this schedule. In February the percentage of food in the total was 46%, as compared with 70% up to January. According to such preliminary information as is available at the time of writing, this falling ratio of food to other commodities will be reflected also in the

¹ Let it be assumed for the purpose of illustration, that the 3.8 million tons of food shipped up to the end of February 1946 were composed of cereals, and that they were consumed at the rate of 2650 calories per person per day; they would suffice, then, to feed about 12 million persons during one year, though in reality, of course, as seen in Chapter IV, calorie levels in UNRRA countries were only fractions of the 2650 calorie a day standard. Total relief deliveries of food after the first world war to Europe alone amounted to 6.2 million tons (including large quantities of lard), though needs at that period were smaller than at present. Of this quantity not less than 4.8 million tons were rushed in when most urgently needed, i.e. during the critical months January-August 1919. The estimated value of total food relief amounted to about 1.35 billion U.S. dollars. For further details see: League of Nations, *Relief Deliveries and Relief Loans*, Geneva, 1943.

TABLE I (Continued)

Ukrainian SSR	Albania	Byelorussian SSR	Austria	China	Others	Total
3	41	1	8	204	9	2073
-	-	-	-	-	-	115
12	0.2	7	-	3	-	77
15	0.7	7	-	25	2	214
2	1	4	-	1	-	150
-	2	-	-	-	-	62
1	-	1	-	-	-	88
63	7	24	-	-	-	388
6	-	1	-	-	-	100
102	57	45	8	275	13	3587
1	3	-	-	4	1	238
102	59	45	8	279	15	3825

March and April figures. It should not be overlooked, however, that food shipments of a *de facto* relief character have reached, and no doubt will continue to reach, needy areas independently of UNRRA. Total post-war relief will be greater than indicated by UNRRA activities alone.

CHAPTER VI

MORBIDITY AND MORTALITY

Food, of course, is not the only factor determining health; during the war most of the determinant variables of which health is a function have developed unfavourably. Cities have been destroyed by bombing and land warfare, and since residential building has come to a practical standstill in all belligerent countries, the housing shortage is well-nigh universal. Many families have had to "double up" in narrow quarters, and in the bombed-out areas live in improvised shelters or in cellars of ruined buildings. Over-crowding has become even more acute where whole population groups evicted from their home regions have been moved to areas ill equipped to receive large numbers of destitute people, or where the military have requisitioned civilian buildings. The lack of housing affects health so much the more seriously as fuel is short all over Europe, and clothing and bedding are scarce. The meagre supplies of pre-war textiles and shoes are being used up, and replaced, if at all, by articles of inferior quality. The lack of soap, the almost complete absence of hot water, and the difficulty of finding decent privacy have naturally affected the habits of personal cleanliness. On top of all this, the efficiency of public health services has lessened in many cases owing to the destruction of hospitals or their requisitioning, the mobilization of doctors and nurses for military service, and the gradual exhaustion of the supplies of medicines, drugs and medical equipment.

Simultaneously with the deterioration of living conditions, the demands put upon the individual have often increased. Hours of work have generally been lengthened, and housewives have had to spend long, weary hours in procuring and preparing the family meals. Fatigue, the result of overwork, lack of sleep, and nervous strain, has increased. And to these tangible factors must be added less tangible but no less real factors of a psychological order. Aerial bombardment, and in occupied areas the presence of the enemy, have exposed the population to great nervous and physical strain. In all

the belligerent nations people shared a common anxiety as to the fate of kin and friends; the future appeared uncertain and dark.

In view of the interaction of the many factors which in changing combination influence living conditions under the impact of war, the causal connection between any one of them and the status of public health is difficult to determine with any degree of finality. Indeed, the relationships between food and health developments have everywhere been complex and involved; nowhere simple and direct.

Turning to the problem of finding statistical measurements of health, the difficulties are almost as great. There exist no direct measures of health; available indices are, as it were, negative in character, relating to morbidity and mortality and thus only indirectly to health. These statistics were even before the war neither complete nor always reliable. Morbidity statistics, in particular, left much to be desired. They included in general only cases of serious disease, and they often related to deaths rather than to the number of cases of a disease. Epidemics normally fluctuate widely from one year to another. One should therefore avoid drawing far-reaching conclusions on percentage changes in such illnesses, in particular where the absolute number of cases is small. It is desirable in order to arrive at a balanced picture to take into account all sickness, for while some diseases have increased, others—diabetes and certain nervous disorders—are said to have decreased during the war. A warning is also in place against drawing too far-reaching conclusions from reports covering only a part or certain specific areas of a country. Since such reports generally refer to localities which are urban in character and seem on the whole to show greater increase in the incidence of illness than the country as a whole, in so far as possible it is desirable to use national averages. Both morbidity and mortality statistics are likely to be least reliable in countries where health has deteriorated the most and the administration is most disorganized by war or civil strife.

In the following summary descriptions of the evolution of morbidity and mortality during the war no attempt will be made, for the reasons stressed above, to draw specific conclusions as to causal relationships between public health developments and changes in diets.

I. Morbidity¹

In the past, almost without exception, great wars have been followed by disastrous epidemics. The most recent wartime experience (i.e., since 1939) seems more fortunate, and the world has so far been spared serious outbreaks of this nature, due to improved methods of epidemic control. The five international quarantine diseases—plague, cholera, yellow fever, smallpox and louse-borne typhus (to which may be added louse-borne relapsing fever)—normally occur more or less endemically in geographically circumscribed areas, but are capable of spreading suddenly with great violence. All these diseases have, as it were, been stirred up by the war, but new outbreaks have been successfully localized. Still, some of these epidemics are transmitted to humans by an animal vector, and the war has favoured their breeding and spread to such an extent that they continue to constitute a source of further potential outbreaks.

Cholera epidemics have occurred in India, Burma and China, but have gained little ground outside these, their usual grounds. A minor smallpox epidemic hit Italy in the spring of 1944 and persisted into 1945, particularly around Naples, but there has been none in northern Europe. Plague, which normally occurs in almost all large seaports of the world, is spread by rats and rodents. Though numerous centres of infection persist, no general outbreak has occurred, apart from local epidemics mainly in the Suez Canal zone, Dakar and China. Yellow fever has also, on the whole, confined its ravages to the old *loci* of infection. Typhus, which together with relapsing fever is transmitted by lice, normally flares up when personal hygiene deteriorates and great numbers of people are on the move. There have been outbreaks in eastern Europe, in Italy and later in Germany; a few cases have occurred in northern and western Europe, carried there mainly by displaced persons, but few cases of secondary infection have been noted. If typhus has spread less than could reasonably have been expected in the circumstances, it is due largely to the efficiency of modern delousing techniques, and, after the liberation of Europe, to the liberal use of the new powerful insecticide, D.D.T.

While modern controls have contributed to keep the pestilence dis-

¹ The survey here given is chiefly based on the following technical sources to which reference should be made for fuller description, analysis and qualifications:

League of Nations: *Weekly Epidemiological Record*; *Bulletin of the Health Organisation*, e.g., Vol. X, No. 4, "Health in Europe."

United Nations Relief and Rehabilitation Administration, *Epidemiological Information Bulletin*.

eases in check, certain other epidemics have increased. Fortunately, however, influenza, the great killer after the first world war, has not been severe. There were widespread epidemics, particularly in the winter of 1943/44 and again in 1945, both in Europe and in the Americas, but they were characterized by low mortality rates—indeed, mortality has remained below expectations since 1939. Poliomyelitis has shown a growing incidence in many countries, among which are France, Switzerland, Norway, Sweden and the Netherlands. Meningitis, traditionally considered a military disease, has become more common in Europe, but has been on the wane since 1941, except in Great Britain where, however, the absolute number of cases is low. Rather serious outbreaks have recently been reported in Japan.

Turning to typhoid fever, the picture becomes less encouraging. It used to be considered a typical war disease causing as many losses to the armies in the field as enemy action. Since the introduction of vaccination this is no longer the case, but with the destruction of cities and the uprooting of populations, the disease has spread to civilians. The immediate cause is probably connected with the destruction of the public services and the drinking of contaminated water. A quite serious epidemic occurred in September 1939 in Warsaw, after the bombardment of the city, and its spread has since been determined by the progress of bombing; it appeared in the United Kingdom in 1940 and 1941, in Germany after 1942, and epidemically in Japan in 1945. But considering Europe alone, reported cases before the end of the war rarely exceeded twice the normal number. In Germany the incidence in 1943—the peak war year—was 2.3 times normal, as was also true in France. The incidence was low in Scandinavia, the United Kingdom, the Netherlands, Belgium, Switzerland and northern France, increasing progressively as one moved east and south from this area. But with the end of the war, and the upheaval of life in central Europe, the situation rapidly deteriorated, until typhoid fever came to outweigh diphtheria (previously the chief wartime epidemic) both in frequency and in severity. The table below summarizes reported cases of typhoid fever—May to October 1945—in certain European countries.

It is likely that actual figures are higher than those reported, as registration is bound to be less complete than before the war. Switzerland, the Scandinavian countries and the United Kingdom have shown some increase, although the absolute figures remain low; but since the summer of 1944 a new and heavily infected area extends

Country	Number of cases reported		Index (pre-war median = 100)
	Pre-war	1945	
France	2558	6251	240
Belgium	216	552	260
Netherlands	202	3215	1590
Germany	800 (est.)	16734	2090
Bohemia-Moravia	—	4951	—
Austria	80	1962	2450
Poland	5400 (est.)	58943	1090

SOURCE: United Nations Relief and Rehabilitation Administration, *Epidemiological Information Bulletin*, Vol. 2, No. 3, January 1946.

from the Baltic Sea and the North Sea to the Danubian plains. Its extent and intensity render it one of the most serious epidemics of the second world war.

Diphtheria is the disease which has shown the greatest increase during the war, particularly on the Continent of Europe. It was kept within bounds in Sweden, Denmark, Switzerland and the United Kingdom, but it was already on the increase in Germany during the nineteen thirties. During the summer of 1941 incidence again began to rise and continued to rise through 1944. There were 173 thousand cases in 1941, 283 thousand in 1943, and still more in 1944, all within the pre-Munich territory. Case mortality remained high. From Germany the epidemic spread to the occupied countries, and the increase in the disease was greatest in those countries where the level had previously been the lowest—the Netherlands and Norway—the situation there becoming worse than in Germany. The incidence per 100,000 inhabitants in 1943, the last year for which complete returns are available (1944 figures would be higher), was 341 in Germany, 760 in Norway, and 662 in the Netherlands. The incidence increased 112 times in Norway and 40 times in the Netherlands. The number of cases in France rose from 13 thousand in 1940 to 47 thousand in 1943; the rise in Belgium was from 2 thousand in 1939 to 16 thousand in 1943. In all some 630 thousand diphtheria cases were reported in 1943 in such European countries as maintained tolerably efficient registration. Considering non-reported cases, Knud Stowman, chief of the Epidemiological Information Service of UNRRA, estimates that there were about one million cases in 1943 in Europe (excluding the U.S.S.R.), and that the figure was at least as high in

1944. This disease involved about 50,000 deaths in 1943, mostly of children. It is reported that in 1945 diphtheria had become the leading epidemic disease in Japan, with a case mortality much higher than that encountered in Europe.

The war has also led to an extraordinary spread of various skin diseases, no doubt largely attributable to lack of soap and hygienic facilities. Scabies increased all over Europe; in Norway it was seven times as prevalent in 1943 as in 1938; in Amsterdam 75 times. It is reported that in the devastated towns of the province of Aquila, Italy, 85% of the population were infected and 15% in other districts. Impetigo shows a similar alarming increase.

Among the endemic diseases tuberculosis is particularly sensitive to prevailing social and economic conditions and above all to the state of nutrition and output of work. As notification of illness is universally incomplete, mortality figures are a better index of the spread of the disease, even if they are slower than notifications to react to change in the situation. It is well known that tuberculosis was on the decrease in most countries in the inter-war period. This development was reversed during the war, and one observes a greater severity of the disease, manifesting itself in an unusual number of acute cases, interstitial pneumonia and tuberculous broncho-pneumonia. Increases in mortality are noted over most of the Continent, and were marked in Belgium, France and the Netherlands, and also in eastern Europe, Yugoslavia and Greece. It is significant that in France, for instance, mortality from tuberculosis per 100,000 inhabitants in the Department of the Seine increased from 172 in 1939 to 234 in 1941, falling to 191 in 1943, whilst in Brittany (where food was plentiful) it continued to fall, being, in the Department of Côtes-du-Nord 257 in 1938 and 148 in 1943. The most seriously threatened areas were Paris, Marseilles, Lyons and the cities of the Riviera. In Greece the death rate from tuberculosis in 1942 was 456 per 100,000 inhabitants. The increase in active cases has been accompanied by a large increase of pre-tubercular conditions and latent tuberculosis. Where food conditions remained reasonably good, tuberculosis has on the whole either been fairly stable or has continued to fall. It should be noted, however, that owing to intensified industrial activity the rate has tended to go up in industrial centres, even in the United Kingdom and the United States.

Among other endemic diseases malaria has become more severe in war-stricken areas. In Greece malaria mortality is ordinarily high

(40 per 100,000 inhabitants in 1939), but beginning in the autumn of 1942 there was a marked increase. Together with climatic conditions favourable to the breeding of anopheles (the carriers of infection), causes for this outbreak were displacement of populations, decreased resistance of individuals due to hardship and famine, and lack of quinine and other antimalarial drugs. In 1943 the incidence decreased, but the disease remained epidemic in certain districts of the country. It has increased also in other countries, but exact statistics are rare, for malaria is essentially concentrated in poor rural areas where people rarely resort to physicians.

War generally leads to a heavy increase in venereal disease, and this war has been no exception; it has spread not only in belligerent countries but in neutral countries as well. The situation has been particularly acute in camps of foreign and conscripted labour and areas of occupation. Syphilis case reporting has been in force only in Scandinavia for any length of time. Between 1940 and 1944 cases increased 7.7 times in Denmark, 6.13 times in Norway and 3.9 times in Sweden. Fragmentary evidence indicates that, as might be expected, the situation is even less favourable on the Continent. Syphilis was made notifiable in Belgium in 1942, and the incomplete returns show a 70% increase between 1942 and 1944. Records of dispensaries in France indicate a doubling of cases between 1941 and 1942, and again between 1942 and 1943. Unofficial reports from other countries indicate similar developments.

The prevalence of specific deficiency diseases is almost impossible to measure statistically. Almost all over the Continent of Europe a loss of body weight has been noted amongst adults, and cases of retarded growth amongst children and adolescents are common. The loss of body weight may be partly connected with nervous tension and greater physical activity, but it should be remembered that wartime diets even when adequate in calories, are uniformly dull, and that appetite forms a limiting factor in individual intake. The new-born babies are generally underweight in low-consumption areas, and deficiencies are grave among adolescents. Specific deficiency diseases—rickets, scurvy, gastro-intestinal troubles due to vitamin B₁ deficiency, and hunger-oedema have also increased, though reliable statistics are very rare.

The reader interested in a more adequately documented technical treatment of the behaviour of morbidity during the war should consult the relevant studies published during recent years by the Health Organisation of the League of Nations.

II. Mortality

It is obvious that over a sufficiently long period of time the many elements influencing the health will be reflected, though in a negative way, in changes in mortality—the average expectation of life being perhaps the best single long-range index of public health: the better the health on an average, the lower will be the specific mortality rates. Yet, in interpreting available statistics many reservations are needed to avoid hasty and unfounded conclusions. It is necessary to recall, first, that in a period such as the present, populations are exposed to many strains which only gradually drain their vitality. Under the effect of malnutrition and bad living conditions resistance is gradually lowered, and morbidity increases, but it requires time before individuals have passed through the whole cycle of exhaustion and sickness, ending in death. The cumulative effects may be relatively slow to appear in full, and several years are needed before we can fully estimate the war's damage to health. Secondly, one must take into account the composition of populations in respect of age, sex, etc.¹ Still, the general death rates are traditionally used to provide a first general orientation to the problem. Table I shows that rate, together with rates of births and infant deaths in European countries, from 1938. Diagram I illustrates the development of the civilian death rates since before the war. In considering this diagram, however, it must be borne in mind that it relates to the civilian population only. In those countries, therefore, where large numbers of persons have been absent in military service or on forced labour, a reduction in the death rate would occur statistically provided specific mortality had not changed.

The death rate continued its pre-war downward course in Denmark, Sweden, the United Kingdom, Switzerland (except 1944), Ireland and Bulgaria (until 1943). All indications are that the situa-

¹ In the course of nature the great majority of all deaths fall on infants and persons over fifty. A relatively small change, therefore, in the specific mortality of these groups, which constitute only a minority of the total population, is capable of affecting the general death rate quite considerably. The majority of people, the young and persons in the active ages, on the other hand, have generally a low specific mortality, and even a relatively great change in it (indicative of a serious deterioration in health) affects the general death rate comparatively little. As during the present war special rations have been granted to children, and other welfare measures have been taken on their behalf, and as the old ages have been relatively free from epidemics such as influenza, which decisively affect the mortality of the old-age groups, a stable or even slightly falling general death rate is not inconsistent with a seriously falling level of health among the majority of the population.

TABLE I

BIRTH RATES, DEATH RATES AND INFANT MORTALITY RATES (o/oo) 11
EUROPE AND THE UNITED STATES, 1938-1943(44)

Country		1938			1939			1940		
		Birth Rate	Death Rate	Infant Mortality	Birth Rate	Death Rate	Infant Mortality	Birth Rate	Death Rate	Infant Mortality
Germany ¹	A	19.0	12.0	62	20.5	12.7	62	20.4	13.0	65
	B	19.6	11.6	60	20.4	12.3	60	20.0	12.8	63
Belgium ²		15.8	13.1	73	15.3	13.8	73	13.4	16.1	85
Bulgaria ³		22.8	13.7	144	21.4	13.4	139	22.2	13.4	136
Denmark		18.1	10.3	59	17.8	10.1	58	18.3	10.4	50
Spain		20.0	19.1	120	16.5	18.4	135	24.4	16.5	109
Finland ⁴		20.9	13.0	68	21.1	14.7	70	17.7	19.8	88
France ⁵		14.6	15.4	66	14.6	15.5	64	13.8	18.9	92
Hungary ⁶		20.1	14.4	131	19.6	13.7	121	20.3	14.3	130
Italy ⁷		23.7	14.1	106	23.5	13.4	97	23.4	13.6	103
Norway		15.6	10.0	37	15.9	10.2	37	16.3	10.9	39
Netherlands		20.5	8.5	37	20.6	8.6	34	20.8	9.9	39
Roumania ⁸		29.6	19.2	183	28.3	18.6	176	26.5 ⁹	19.2 ¹⁰	189
United Kingdom		15.5	11.8	55	15.3	12.2	53	14.9	14.0	60
England and Wales ¹¹		15.1	11.6	53	14.9	12.1	50	14.5	13.9	56
Scotland ¹²		17.7	12.6	70	17.4	12.9	69	17.1	14.4	78
Northern Ireland		20.0	13.7	75	19.5	13.5	70	19.6	14.6	86
Ireland		19.4	13.6	67	19.1	14.2	66	19.1	14.2	66
Sweden		14.9	11.5	42	15.4	11.5	39	15.1	11.4	39
Switzerland		15.2	11.6	43	15.2	11.8	43	15.2	12.0	46
Czechoslovakia										
Bohemia Moravia		14.5	12.6	100	14.6	12.9	95	16.6	13.3	94
Slovakia ¹³		22.8	13.8		23.1	13.1	128	24.2	14.6	140
Portugal		26.6	15.4	137	26.2	15.3	120	24.4	15.7	126
U. S. A.		17.6	10.6	51	17.3	10.6	48	17.9	10.8	47

SOURCE: League of Nations: *Statistical Year Book*, and *Monthly Statistical Bulletin*, where not otherwise indicated.

¹ Provisional figures.

² *Statistik Årsbog* (1945) (Denmark).

³ *Statistik Årsbok* (1943-45) (Sweden).

⁴ A-Germany including Saar territory, Austria, Sudeten district, Danzig and Memel.

⁵ B-Reich under 1937 boundaries (including Saar territory).

⁶ Including war losses: England & Wales—excluding military deaths abroad.

⁷ Not including children who died, prior to registration. These would raise total 7 or 8 points. Since 1940, without Eupen-Malmedy.

⁸ As from 1930, not including Alsace-Lorraine, 1943-44 not including Corfu.

⁹ Territory of Treaty of Neuilly.

¹⁰ Territory of Treaty of Trianon.

¹¹ 1938-39: including military deaths in Africa and Spain.

¹² 1940: without Bessarabia, Northern Bukovina, part of Dobrudja and of Transylvania; July 1941 to Dec. 1942; with Bessarabia and Northern Bukovina.

¹³ 1938: Slovakia part of Czechoslovakia (territory of 1938). 1939-42: Slovakia as defined by German-Slovak Treaty of Nov. 21, 1939.

tion continued to improve in 1945 except possibly in Bulgaria. The Netherlands, which had a rate of only 8.5% in 1938, the lowest of all countries, shows an increase in 1940 and again in 1944, but it was still only 11.5% in the latter year. In Norway the death rate remained up to 1943 (with the exception of a slight rise in 1940) at its low

TABLE I (Continued)

1941			1942			1943			1944*		
Birth Rate	Death Rate	Infant Mortality	Birth Rate	Death Rate	Infant Mortality	Birth Rate	Death Rate	Infant Mortality	Birth Rate	Death Rate	Infant Mortality
18.9	12.5	64	15.2	12.3	68	16.2	12.6	72			
18.6	12.2	63	14.9	12.2	66	16.0	12.4				
12.1	14.6	84	13.1	14.7	77	14.8	13.5	67	15.2	15.7	77
21.3	12.5	123	21.9	12.8	127	21.1	14.2	144			
18.5	10.3	55	20.4	9.6	47	21.4	9.6	45	22.6	10.2 ^b	48 ^b
19.5	18.6	143	20.1	14.7	103	22.8	13.2	99			
24.1	13.7	59	16.5	15.0	67	20.3	13.3	49	21.1	18.1	69
13.1	17.3	73	14.5	16.9	71	15.9	16.4	75	16.3	19.2	77
18.5 ^a	13.2 ^a	117 ^a	19.4 ^a	14.5 ^a	134 ^a						
20.8	13.8	115	20.4	14.2	112	20.4	14.1				
15.5	9.8	43	17.2	10.4	37	18.9	9.8				
20.3	10.0	43	21.0	9.5	40	23.0	10.1	41	24.2	11.5	44
25.7	19.1	168	24.4 ^a	19.5 ^a	183						
14.6	13.0	63	16.0	11.6	53	16.7	12.0	52	17.8	11.7	48
14.1	12.8	59	15.6	11.5	51	16.2	11.9	49	17.5	11.6	46
17.5	14.1	83	17.6	12.6	69	18.4	12.9	65	18.5	12.4	65
20.9	15.2	77	22.9	13.3	76	24.2	13.4	78	23.5	12.8	67
19.0	14.6	74	22.3	14.1	69	21.8 ^a	14.7 ^a	83	22.0	15.4	72
15.6	11.3	37	17.7	9.9	29	19.2	10.1	29	20.3 ^a	10.8 ^a	30 ^a
16.9	11.1	41	18.4	11.0	38	19.2	11.0	40	19.6	12.0	42
17.2	13.5	99	18.6	14.7	98	21.6	14.2	100	21.8	14.6	
24.1	14.7	135	24.3	15.2							
23.7	17.4	151	23.8	16.1	131	24.9	15.3	133	25.0	14.8	122
18.9	10.5	45	20.9	10.4	40	21.5	10.9	40	20.3	10.6	40

pre-war level. On the other hand, the German death rate rose moderately until 1943, but according to the preliminary information available, has since shown a pronounced increase. A similar development is believed to have taken place since 1944 in Italy, where previously the death rate had remained fairly stationary. Bohemia-Moravia, Belgium, Finland and France show fairly large increases since early in the war. The French rate rose from 14.6 0/00 before the war to no less than 19.2 0/00 in 1944. Roumania alone among the countries included in the table showed a higher rate (19.2 0/00 in 1942); it seems likely, however, that mortality conditions have been even more unfavourable, in some years at least, in Greece, Poland, Yugoslavia and occupied Russia, for which countries no reliable statistics of this kind are available for recent years.

It was shown in the foregoing that a fairly large portion of the

CIVILIAN DEATHS PER THOUSAND INHABITANTS IN SELECTED COUNTRIES FOR THE PERIODS 1935/39 AND 1940/44 AND FOR THE YEAR 1944(43)

1935/39 1940/44 1944

NORWAY

DENMARK

SWEDEN

NETHERLANDS

ENGLAND & WALES

SWITZERLAND

SCOTLAND

GERMANY ¹

N. IRELAND

SPAIN ¹

ITALY

BULGARIA ¹

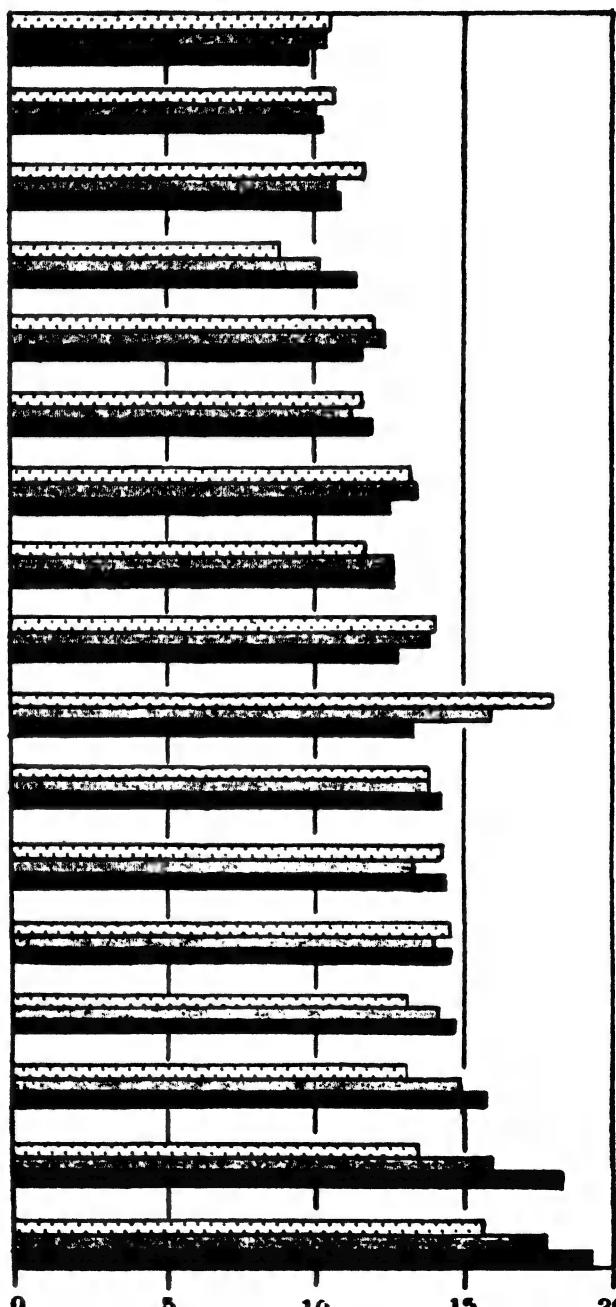
HUNGARY ²

BOHEMIA & MORAVIA

BELGIUM

FINLAND

FRANCE



deaths occur among infants under one year of age. If, as before the war in most European countries, birth rates were on the decline, absolute numbers of infant deaths would also fall, thereby substantially reducing the general death rate. But contrary to expectations births have on the whole shown a reversal of pre-war trends and have increased considerably in a number of countries. As seen in Diagram II this holds true in overseas countries such as the United States, Canada and New Zealand. It holds true also in the United Kingdom—in spite of the strains of war—and in the relatively favoured nations of Europe—Sweden, Switzerland and Denmark. But even more remarkable, the same trend is found in countries more directly affected by actual warfare, and less fortunate in the supply of food and other necessities of life. Natality increased in the Netherlands, Norway, Czechoslovakia and Finland (in 1941, i.e., between the two Finno-Russian wars). But ironically enough, it decreased in the countries which before the war had already made the greatest efforts to increase it. In Germany it fell from 19.6 0/00 in 1938 to 16 0/00 in 1943; in Italy from 23.7 0/00 to 20 0/00 during the same period. It decreased also in Belgium, France and Bulgaria.

In consequence of this widespread increase in the birth rate, population did not—in spite of certain increases in the death rate—generally decrease. Indeed, the excess of births over deaths was frequently greater than in peacetime. Diagram III shows the development of the relation of births to deaths.

Among the important countries included in the diagram only Belgium and France show an actual decrease in population numbers during the war; the situation in these countries is likely to have improved in 1945 and 1946. It is to be expected, however, that in this year conditions in central Europe and Italy were much less favourable than during the war.

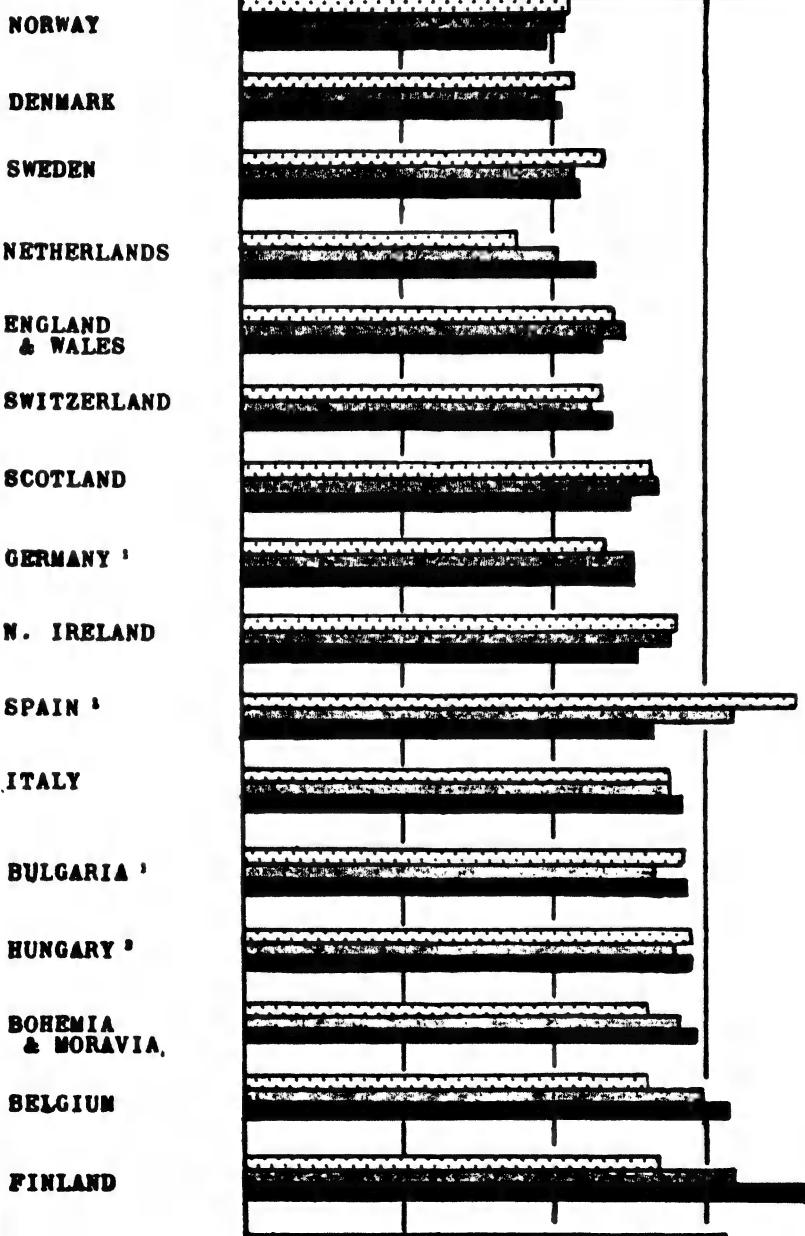
In view of the many partly conflicting forces that determine the general death rate it would be desirable to consider separately the mortality of infants and persons over one year of age. Little recent information is available concerning the latter group, though an earlier enquiry did not suggest a general increase in the specific mortality of this group about 1942.¹ Infant mortality, on the other hand, is in its own right a very sensitive index of health and well-being. Rates are shown in Table I above, and are illustrated graphically in Diagram IV, in which has also been plotted corresponding rates for the first world war.

¹ Cf. *League of Nations, Food Rationing and Supply, 1943/44*, Geneva, 1944, pages 73-77.

DIAGRAM I

CIVILIAN DEATHS PER THOUSAND INHABITANTS IN SELECTED COUNTRIES FOR THE PERIODS 1935/39 AND 1940/44 AND FOR THE YEAR 1944(43)

1935/39 1940/44 1944



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1935/39 1940/44 1944

NORWAY

DENMARK

SWEDEN

NETHERLANDS

ENGLAND
& WALES

SWITZERLAND

SCOTLAND

GERMANY ¹

N. IRELAND

SPAIN ²

ITALY

BULGARIA ³

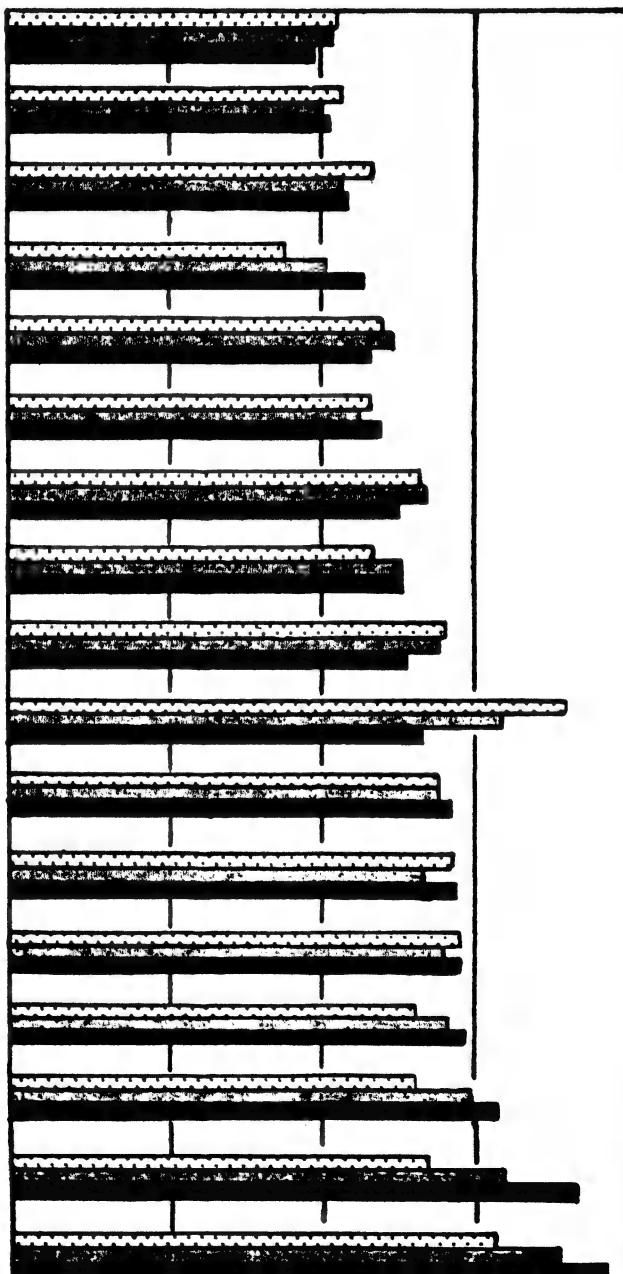
HUNGARY ³

BOHEMIA
& MORAVIA

BELGIUM

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FRANCE



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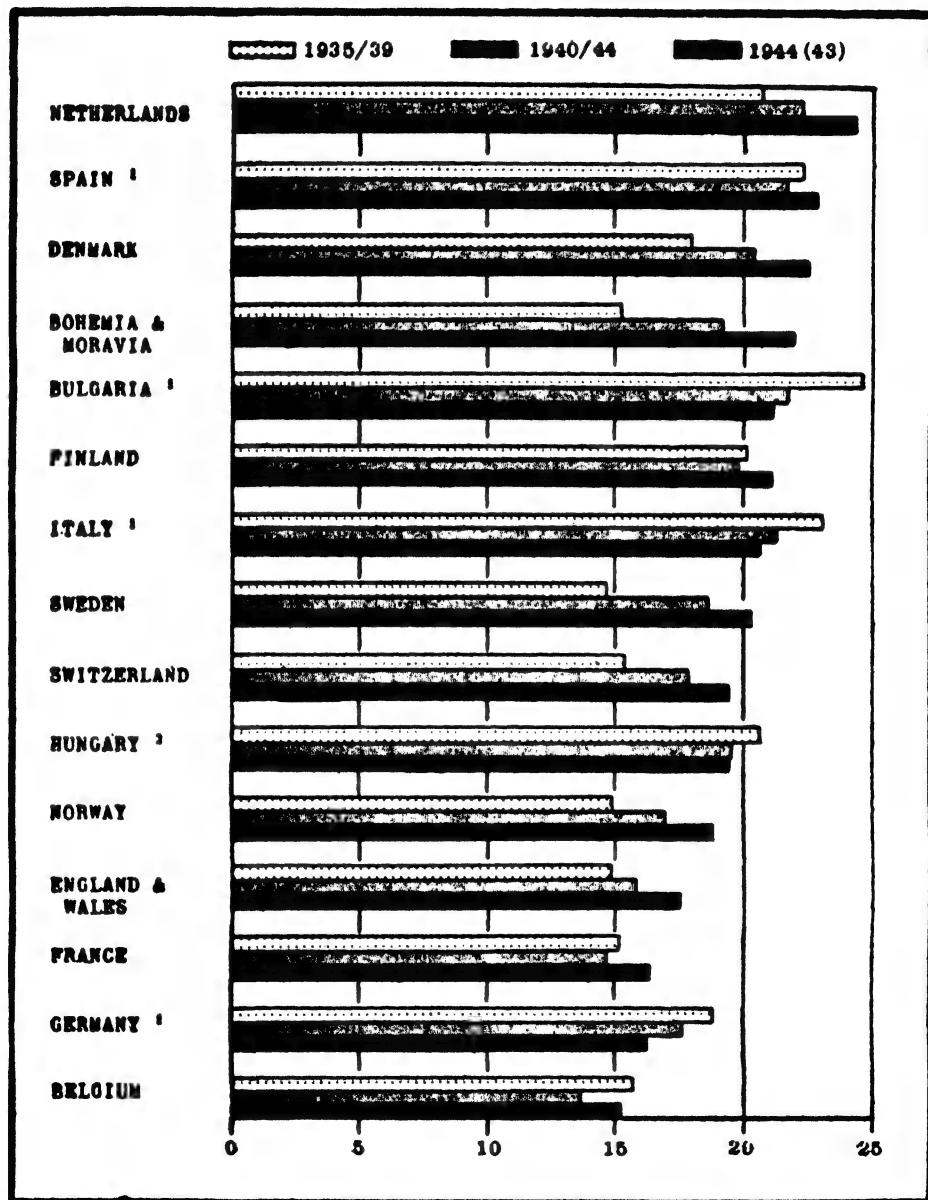
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DIAGRAM II

BIRTHS PER THOUSAND INHABITANTS IN SELECTED COUNTRIES FOR THE PERIODS 1935/39 AND 1940/44 AND FOR THE YEAR 1944(43)

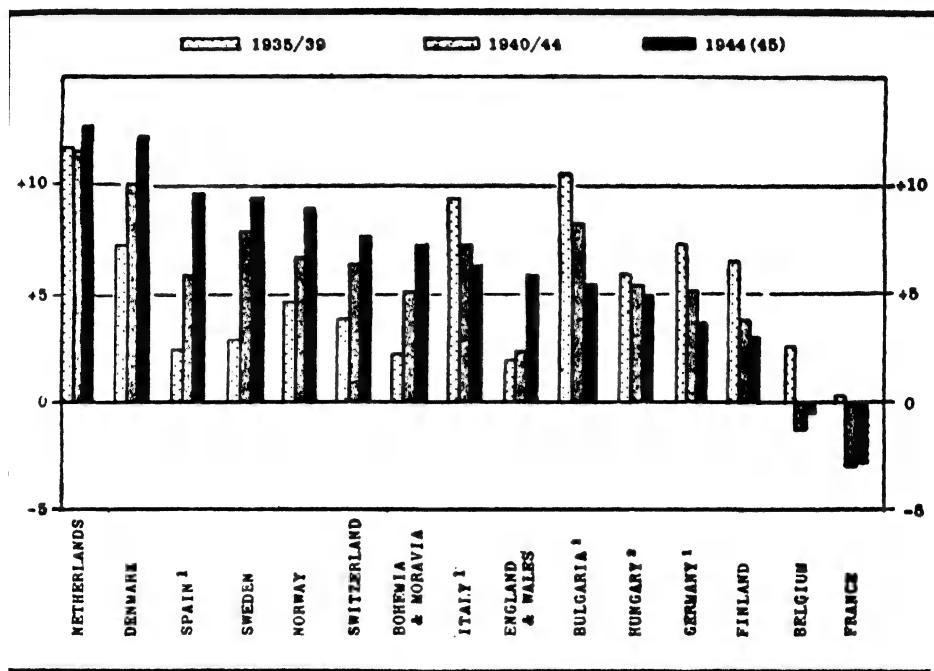


* 1943.

* 1942.

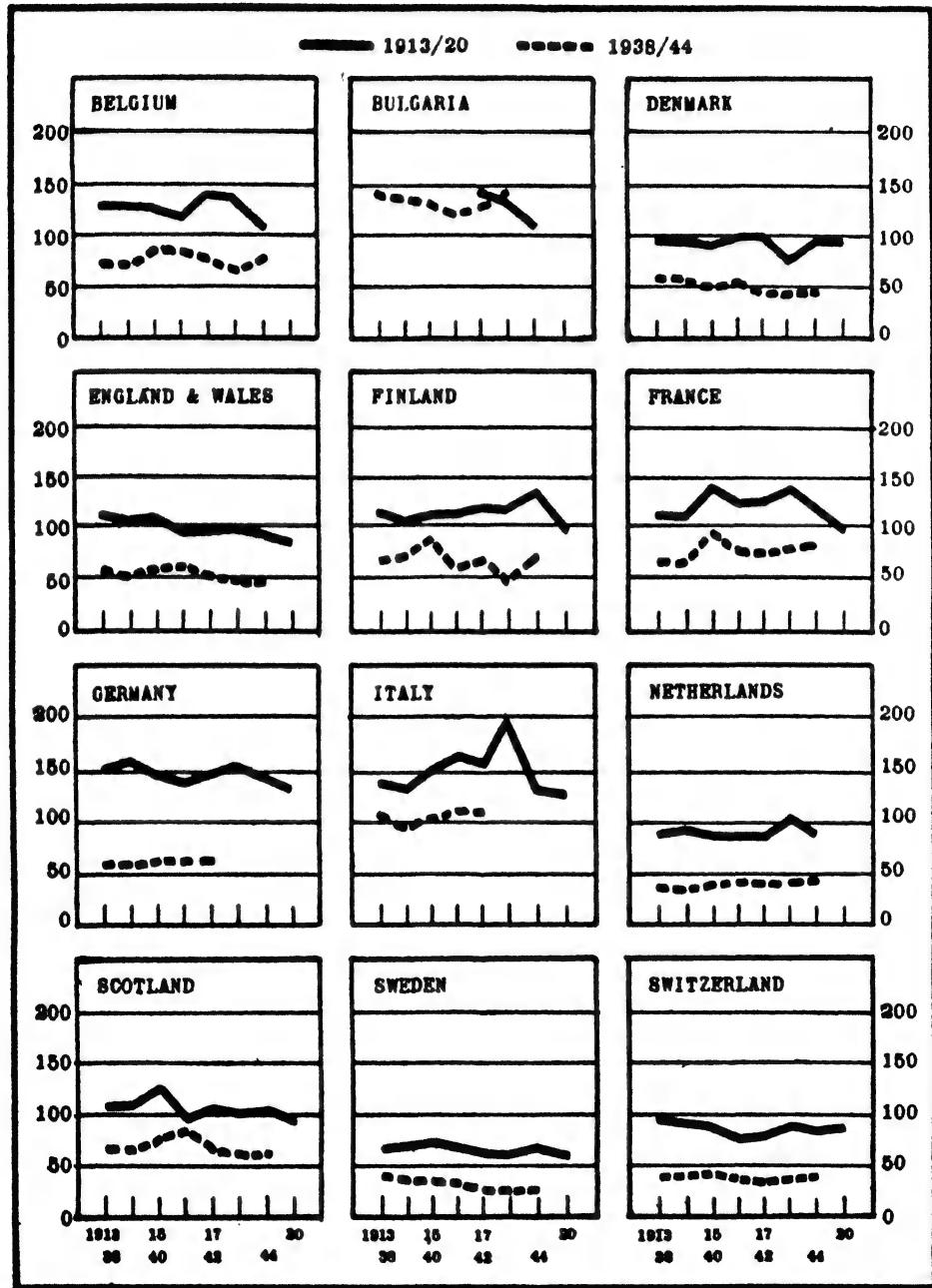
DIAGRAM III

EXCESS (+) OR DEFICIT (-) OF BIRTHS OVER DEATHS PER THOUSAND INHABITANTS IN SELECTED COUNTRIES FOR THE PERIODS 1935/39 AND 1940/44 AND FOR THE YEAR 1944 (45)



Infant mortality has remained on a considerably lower level during the second than during the first world war; at the worst a part only of the inter-war gains was lost. In considering this unexpectedly favourable turn of events, it is worthy of note that during the war years the correlation between changes in infant deaths and direct war disturbances was higher than between infant deaths and nutritional levels. Most countries succeeded in safeguarding the nutritional intake of children, but it was more difficult to protect the children against the effects of displacement, the breakdown of the public services, and so on. In Sweden, Switzerland, the United Kingdom and Denmark infant mortality continued to fall, and reached new record lows despite some decrease in nutritional levels, and, in the United Kingdom, despite aerial bombardment and partial evacuation of cities. A fairly unchanged level of mortality for the war

DIAGRAM IV

INFANT MORTALITY RATES IN SELECTED COUNTRIES 1913/20
AND 1938/44

period as a whole is to be noted in the case of Czechoslovakia, Bulgaria and Norway, and except during the periods of actual warfare, in Finland. In the Netherlands the rate increased in 1944, but was still low (44 0/00). The higher Belgian rate also increased during the war, but not seriously, whilst in France the rate went up sharply from 66 0/00 in 1938 to 92 0/00 in 1940, and though it recovered subsequently, it still stood at 77 0/00 in 1944. In spite of differences in nutritional levels, the situation was fairly similar in Germany, where the rate increased from 62 0/00 in 1938 to 72 0/00 in 1944. It also rose in Italy. Though we lack reliable information, there is evidence to suggest that the ordinarily high rates in eastern Europe and the Balkans were enhanced during the war, particularly in Poland, parts of Yugoslavia and Greece. Indeed, in the Athens-Piraeus area the infant mortality rate in the famine year, 1942, was 231 0/00 or 2.6 times the pre-war rate.

The development of infantile mortality in 1945 was in many of the European countries less favourable than during the preceding war years. The deterioration was partly connected with the sweeping land warfare, the heavy aerial bombardments and the consequent breakdown of public services, communications and administration, as well as the displacement of populations; but it reflects also, no doubt, the further deterioration in the supply situation over wide areas. National statistics are not as yet available, but the returns of infant mortality in the larger European cities may serve to illustrate the trend in the various countries.

	Sweden (Stockholm)	Nor- way (Oslo)	Den- mark (Copen- hagen)	Great Britain (126 cities)	Nether- lands (3 cities)*	Bel- gium (3 cities)*	France (6 cities)*	Italy (7 cities)*	Spain (2 cities)*
1939	32	30	34	52	29	51	54	79	141
1944	23	34	41	52	36	54	59	107	70
1945	24	26	45	54	93	84	107	124	72

* Arithmetic average.

SOURCE: United Nations Relief and Rehabilitation Administration, *Epidemiological Information Bulletin*, Vol. 2, No. 3, February, 1945.

The situation remained favourable on the whole in Scandinavia, the United Kingdom and, relatively speaking, in Spain, where the level was receding from the very high levels recorded during the Civil War. In the Netherlands there was a three-fold increase compared with 1939, reflecting the unusually difficult situation of this

country during the prolonged period of liberation. In eastern France and central Italy the rate more than doubled, though the national averages increased less. The situation in Germany also deteriorated greatly and suddenly. According to information published by UNRRA¹ the infantile mortality rate reached 145 0/00 in Hamburg in November 1945, or about three times the 1938 rate. During the five-week period ending October 12th, 1945, it rose to 231 0/00 in Berlin, or almost exactly the same rate as was registered for the Athens-Piraeus area during the famine in 1942. It is stated that the rate in Vienna in the summer of 1945 reached 328 0/00. It is to be feared that similar or higher rates prevailed also in Hungary and Roumania. While the situation in the west of Europe has improved in 1946, it is likely that conditions in central and eastern Europe and probably in Italy remain as bad as or worse than in 1945.

III. Summary of Morbidity and Mortality Developments

In summing up the evidence examined above it is necessary to consider separately the war years and the period after the conclusion of hostilities.

During the war period the data point to a health situation which in analogy with the food situation became more and more diversified along regional lines. The United Kingdom, Sweden, Switzerland and Denmark succeeded not only in preventing deterioration of health, but by all the signs, in further improving their, relatively speaking, high pre-war standards. The Netherlands, Norway and Czechoslovakia, and, during most of that period, Finland, succeeded in avoiding serious deterioration, though pre-war gains were partly lost or at any rate not improved upon. It is still too early to know, however, whether or not the populations of these countries have incurred enduring damage to their health. In Germany, France and Italy the situation was more serious. Both morbidity and infant mortality went up decidedly, if unevenly, in different localities and for different classes of the population. Large groups seem to have lived under conditions which may have lasting effects on their future health. Eastern and southern Europe form an area ordinarily characterized by high mortality and low expectation of life, and conditions do not seem to have deteriorated greatly during the war in Bulgaria, Hungary and Roumania; in some parts they may even have improved. No direct statistics are available for Poland, Yugoslavia or Russia,

¹ *Op. cit.*

in parts of which these conditions were no doubt as bad as in Greece during the famine of 1942 and later; in that country all indices of morbidity and mortality reacted violently, indicating a very serious deterioration of health and high mortality.

The conclusion of hostilities did not noticeably affect conditions in the United Kingdom, Sweden, Denmark and Switzerland; they improved on the whole after liberation in France, the Netherlands, Norway, Finland and Belgium. On the other hand, they grew much worse in Germany and Italy and remained bad over most of eastern and southern Europe, though some improvements may have taken place locally. Conditions in Bulgaria, Roumania and Hungary are no doubt as bad as or worse than in Greece and Yugoslavia.

APPENDIX

LEGAL FOOD RATIONS BY COUNTRIES, 1940-1945

EXPLANATORY NOTES TO THE APPENDIX

NOTE: The figures are, in most cases, supplied by governments. In some cases, however, official and non-official sources of varying value have been employed. Rations are given in grammes per week (1 ounce = 28.4 grammes) as relate, in general, to the middle of each quarter.

The sign "r" indicates that the item is rationed, but that no figures are available as to the size of the ration.

The sign "l.r." indicates that the item is locally rationed and that no national averages are obtainable.

The sign "p.r." indicates that the item is on "point rationing" and that no national average can be given.

"Blank" indicates that no information is available. Foods not included in the tables are presumed to be free.

(a)—Weekly rations, except in the cases of four week ration periods, are calculated on the basis of a 4.3 week month.

(b)—100 grammes of flour = 130 grammes of soft bread.

(c)—Generally including dried beans and peas.

(d)—Meat: as purchased, including bone and waste, unless otherwise indicated.

(e)—Fats: all fats including butter, margarine, lard and vegetable oil.

(f)—Substitute or mixture.

THE BALTIC STATES
(Lithuania, Latvia and Estonia)

Consumer Category	1942				1943				1944		
	I	II	III	IV	I	II	III	IV	I	II	III
Bread and Flour (v)											
Normal Consumer	1750	1750	1700	1700	1700	1700	1700	1700	2000	2000	2000
Children 0-3 years	r.	r.	775	775	775	775	775	775	1000	1000	1000
Children 3-6 years	r.	r.	1000	1000	1000	1000	1000	1000	1100	1100	1100
Young Persons 6-18 yrs.	r.	r.	2200	2200	2200	2200	2200	2200	2700	2700	2700
Night and Heavy Worker	r.	r.	2900	2900	2900	2900	2900	2900	3400	3400	3400
Very Heavy Worker	r.	r.	3700	3700	3700	3700	3700	3700	4400	4400	4400
Cereals (v)											
Normal Consumer		150	150		150	150	150	150	150	150	150
Children 0-3 years		275	275		275	275	275	275	275	275	275
Children 3-6 years		210	210		210	210	210	210	210	210	210
Potatoes											
All Consumers					I. r.	I. r.	2000	2000	2000	2000	2000
Sugar											
Normal Consumer	200	200	150	150		150	150	150	150	150	150
Children 0-6 years	r.	r.	200	200		200	200	200	200	200	200
Jam, Honey											
All Consumers					I. r.						
Meat, Meat Prod. (v)											
Normal Consumer	300	300	250	250		250	250	250	250	250	25
Children 0-6 years	r.	r.	125	125		125	125	125	125	125	12
Young Persons 6-18 yrs.	r.	r.	300	300		300	300	300	300	300	30
Night Worker	r.	r.	375	375		375	375	375	375	375	37
Heavy Worker	r.	r.	500	500		500	500	500	500	500	50
Very Heavy Worker	r.	r.	725	725		725	725	725	725	725	72
Fats (v)											
Normal Consumer	200	200	180	180		180	180	180	180	180	18
Children 0-3 years	r.	r.	100	100		100	100	100	100	100	10
Children 3-6 years	r.	r.	160	160		160	160	160	160	160	16
Young Persons 6-18 yrs.	r.	r.	230	230		230	230	230	230	230	23
Night Worker	r.	r.	190	190		190	190	190	190	190	20
Heavy Worker	r.	r.	260	260		260	260	260	260	260	26
Very Heavy Worker	r.	r.	490	490		490	490	490	490	490	49
Liquid Milk											
Children 0-3 years		5250	5250	5250		5250	5250	5250	5250	5250	52
Children 3-6 years		r.	3500	3500		3500	3500	3500	3500	3500	35
Young Persons 6-18 yrs.		r.	1750	1750		1750	1750	1750	1750	1750	17
Cheese											
All Consumers					I. r.						
Eggs											
All Consumers					I. r.						
Coffee (v)											
All Consumers					80	80	80	80	80	80	80

* Expectant and nursing mothers received the same ration.

Consumer Category	1941				1942			
	I	II	III	IV	I	II	III	IV
Bread and Flour (*)								
Normal Consumer	1575	1575	1575	1575	1570	1570	1570	1570
Light Worker	2025	2025	2025	2025	2020	2020	2020	2020
Heavy Worker	2475	2475	2475	2475	2470	2470	2470	2470
Very Heavy Worker	2925	2925	2925	2925	2920	2920	2920	2920
Miners	3825	3825	3825	3825	3820	3820	3820	3820
Cereals (†)								
All Consumers	r.	45	r.	r.	10	130	25	15
Potatoes								
All Consumers		3500	r.	r.	3500	3500	3500	3500
Sugar								
All Consumers	230	230	230	230	230	230	230	230
Jam, Honey								
All Consumers	105	r.	r.	r.	90	105	105	105
Meat, Meat Products (‡)								
Normal Consumer	350	245	245	245	245	245	140	140
Light Worker	r.	r.	r.	r.	315	315	210	210
Heavy Worker	r.	r.	r.	r.	385	385	280	280
Very Heavy Worker	r.	r.	r.	r.	455	455	350	350
Miners	r.	r.	r.	r.	525	525	420	420
Fats (§)								
Normal Consumer		125	r.	r.	105	90	70	70
Light Worker	r.	r.	r.	r.	170	160	135	135
Heavy Worker	r.	r.	r.	r.	240	225	205	205
Very Heavy Worker	r.	r.	r.	r.	305	290	270	270
Miners	r.	r.	r.	r.	705	685	665	665
Liquid Milk								
Children 0-3 years					5250	5250	5250	5250
Children 3-6 years					3500	3500	3500	3500
Children 6-14 years					1750	1750	1750	1750
Young People 14-18 yrs.					1750	1750	1750	1750
Cheese								
All Consumers	125	r.						
Eggs								
All Consumers	l. r.							
Coffee								
Normal Consumer	90	90	r.	r.	15	25	15	15

* Alternate rations; 1820 grammes farina, or 875 grammes alimentary paste, or 875 grammes biscuit, or 1400 grammes bread, or 2450 grammes pastry or 875 grammes grain foods.

† Expectant mothers receive 4000 grammes per month from the fourth month of pregnancy to the second month after birth.

‡ Alternate rations; 2065 grammes farina, or 1400 grammes alimentary paste, or 875 grammes biscuit, or 875 grammes special foods, or 1750 grammes pastry or 1750 grammes grain foods.

§ Alternate rations; 210 grammes honey, or 180 grammes preserved fruit, or 125 grammes candy, or 125 grammes vanilla, or 125 grammes sugar.

¶ Plus 25 grammes sausages. September-October, 1945; plus 50 grammes sausages, 100 grammes pâté de foie or ~~andouillette~~.

BELGIUM

1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III
570	1575	1575	1750	2100	2100	1750	2100	2440 ^a	2845 ^{a,b}	2790
020	2025	2025	2250	2700	2700	2250	r.	r.	3200	r.
470	2475	2475	2750	3300	3300	2750	r.	r.	4000	r.
920	2925	2925	2930	3900	3900	3250	r.	r.	4400	r.
820	3825	3825	4250	5100	5100	4250	r.	r.	6000	r.
r.	175	r.	r.	60	120	120	45	85	115	120
3500	3500	3500	3500	3500	3500	3500	3500	3490	2095	2095
230	230	230	230	230	230	230	230	230	230	230
155	155	140	140	140	140	140	210	210 ^a	210 ^a	175
210	210	140	140	140 ^a	140 ^a	140	245	245	245 ^a	235 ^a
280	280	180	180	180	210 ^a	210 ^a	r.	r.	385	r.
250	350	220	220	220	280 ^a	280 ^a	r.	r.	560	r.
420	420	260	260	260	350 ^a	350 ^a	r.	r.	740	r.
490	490	300	300	300	420 ^a	420 ^a	r.	r.	910	r.
70	80	80	105	105	105	95	115	140 ^a	230 ^a	255 ^a
135	145	145	170	170	135	125	r.	r.	r.	r.
200	210	210	235	235	165	160	r.	r.	r.	r.
280	280	280	300	300	195	185	r.	r.	r.	r.
665	675	675	700	700	375	365	r.	r.	r.	r.
5250	5250	5250	5250	5250	5250	5250	r.	r.	r.	r.
3500	3500	3500	3500	3500	3500	3500	r.	r.	r.	r.
1750	1750	1750	1750	1750	1750	1750	r.	r.	r.	r.
1750	1750	1750	1750	1750	1750	1750	r.	r.	r.	r.
r.	35	35	35	50	50	35	25	r.	25	45
l. r.	l. r.	l. r.	l. r.	65 ^a	65 ^a	35 ^a				
15	25	15	25	25	25	25	r.	35 ^{bb}	35 ^{bb}	80 ^{bb}

^a Expectant mothers receive 1350 grammes extra per month from the seventh month of pregnancy.

^b Including 25 grammes of margarine.

^c Including 150 grammes of margarine, 60 grammes of butter. Light worker received 435 grammes extra; heavy worker 650; very heavy worker 1300; miner 3000.

^d Including a September-October ration of 100 grammes fat pork.

^{bb} Dried eggs (in grammes).

^{cc} Ratios in 1945 of real coffee. In addition, rations of chicory, fluctuating between 10 and 30 grammes per week.

BULGARIA

Consumer Category	1942				1943				1944		
	I	II	III	IV	I	II	III	IV	I	II	III
Bread and Flour (1)											
Normal Consumer	2425 ¹	2425 ¹	2425 ¹	2425 ¹	2100	1750	1750	3865 ²	3865 ¹	3865 ²	3515 ³
Children 0-1 year	1375 ¹	1375 ¹	1375 ¹	1375 ¹	875	875	875	1765 ²	1765 ¹	1765 ²	1765 ³
Children 1-5 years	1375 ¹	1375 ¹	1375 ¹	1375 ¹	1225	1225	1225	1765 ²	1765 ¹	1765 ²	1765 ³
Heavy Worker	4525 ¹	4525 ¹	4525 ¹	4525 ¹	3850	3500	3500	5615 ²	5615 ¹	5515 ²	5055 ³
Very Heavy Worker	5575 ¹	5575 ¹	5575 ¹	5575 ¹	4725	4375	4375	7365 ²	7365 ¹	7365 ²	6665 ³
Cereals (4)											
Normal Consumer	r.	r.	100 ³	100 ³	100 ³	100 ³	100 ³	100 ³	100 ³	50 ³	50 ³
Children 0-5 years	375	375	475	475	r.	r.	r.	r.	r.	r.	r.
Sugar											
All Consumers		235	250	250	250	250	250	250	375	375	125
Meat, Meat Prod. (4)											
All Consumers	Free	4	400	200	400	500	400	400	400	400	400
Fats (5)											
Normal Consumer	250	250	200 ³	250 ³	250 ⁴	250 ⁴	250 ⁴	200 ³	200 ⁴	200 ⁵	200 ⁵
Children 0-5 years	100	100	100 ⁴	100 ⁴	100 ⁴	100 ⁴	100 ⁴	100 ⁴	100 ⁴	100 ⁴	50 ⁴
Liquid Milk											
Normal Consumer					r.	r.	r.	r.	r.	r.	r.
Children 0-1 year					r.	r.	5250	5250	5250	5250	5250
Children 1-5 years					r.	r.	3500	3500	3500	3500	3500
Cheese											
Normal Consumer	100	100	50	r.	100	95	75	75	75	50	50
Children 0-5 years	200	200	100	r.	200	200	150	150	150	r.	r.

• Including 250 grammes of flour in terms of bread.

• Including 880 grammes of flour in terms of bread.

• Rice.

• Two meatless days a week.

• Lard and oil.

• Butter.

CANADA

Consumer Category	1942				1943			
	I	II	III	IV	I	II	III	IV
Sugar								
All Consumers	Free	Free	225	225	225	225	225 ¹	225 ¹
Jam, Honey								
All Consumers	Free	Free	Free	Free	Free	Free	115 ²	115 ²
Meat, Meat Prod. (4)								
All Consumers	Free	Free	Free	Free	Free	455 ³	455 ³	455 ³
						1360	1360	1360
Fats (5)								
All Consumers	Free	Free	Free	225	150	225	225	225

CROATIA

Consumer Category	1942				1943				1944			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Bread and Flour (M)												
Normal Consumer	1400	1400	1050	1050	1050	1050	1150 ^a	1150 ^a	1375 ^a	1375 ^a	1375 ^a	1375 ^a
Heavy Worker	2800	2800	2100	2100	2100	2100	r.	r.	r.	r.	r.	r.
Cereals (C)												
Normal Consumer					115	115	115	115	115	115	115	115
Children 0-2 years					55	55	55	55	55	55	55	55
Potatoes												
Normal Consumer					2100	2100	2100	r.	2000	2000	1500	1500
Children 0-2 years					1050	1050	1050	r.	1000	1000	r.	r.
Sugar												
Normal Consumer	375	125	125	125	75	75	75	75	75	75	75	75
Meat, Meat Prod. (G)												
Normal Consumer	300	300	300	150	150	150	250	250	250	250	250	250
Fats (G)												
All Consumers	125	125	150	100	50	75	110	110	110	110	60	60
Liquid Milk												
Children 0-2 years					5250	5250	5250	5250	3500	3500	3500	3500
Children 2-5 years					3500	3500	3500	3500	3500	3500	3500	3500
Cheese												
All Consumers	r.	r.	r.	r.	r.	100	100	100	100	100	100	100
Eggs (pieces)												
All Consumers						1	1	1	1	1	1	1

^a Including 75 grammes of flour in terms of bread.^b Including 250 grammes of flour in terms of bread.

CANADA (Continued)

Consumer Category	1944				1945			
	I	II	III	IV	I	II	III	IV
Sugar								
All Consumers	225 ^a	225	115	115				
Jam, Honey								
All Consumers	115 ^a	Free	Free	Free				
Meat, Meat Prod. (G)								
All Consumers	455- 1360	Free	Free	Free	Free	Free	Free	Free
Fats (G)								
All Consumers	170	170	200	200	170	200		
Coffee								
All Consumers	150 ^a	225 ^a	225 ^a	Free	Free	Free	Free	Free

BULGARIA

Consumer Category	1942				1943				1944		
	I	II	III	IV	I	II	III	IV	I	II	III
Bread and Flour (1)											
Normal Consumer	2425 ¹	2425 ¹	2425 ¹	2425 ¹	2100	1750	1750	3865 ²	3865 ²	3865 ²	3515 ²
Children 0-1 year	1375 ¹	1375 ¹	1375 ¹	1375 ¹	875	875	875	1765 ²	1765 ²	1765 ²	1765 ²
Children 1-5 years	1375 ¹	1375 ¹	1375 ¹	1375 ¹	1225	1225	1225	1765 ²	1765 ²	1765 ²	1765 ²
Heavy Worker	4525 ¹	4525 ¹	4525 ¹	4525 ¹	3850	3500	3500	5615 ²	5615 ²	5515 ²	5055 ²
Very Heavy Worker	5575 ¹	5575 ¹	5575 ¹	5575 ¹	4725	4375	4375	7365 ²	7365 ²	7365 ²	6665 ²
Cereals (2)											
Normal Consumer	r.	r.	100 ³	100 ³	100 ³	r.	100 ³	r.	100 ³	r.	50 ³
Children 0-5 years	375	375	475	475							
Sugar											
All Consumers		235	250	250	250	250	250	375	375	125	125
Meat, Meat Prod. (4)											
All Consumers	Free	4	400	200	400	500	400	400	400	400	400
Fats (5)											
Normal Consumer	250	250	200 ⁶	250 ⁶	250 ⁶	250 ⁶	250 ⁶	200 ⁶	200 ⁶	200 ⁶	200 ⁶
Children 0-5 years	100	100	100 ⁶	100 ⁶	100 ⁶	100 ⁶	100 ⁶	100 ⁶	100 ⁶	100 ⁶	50 ⁶
Liquid Milk											
Normal Consumer			r.	r.	r.	r.	r.	r.	r.	r.	r.
Children 0-1 year			r.	r.	5250	5250	5250	5250	5250	5250	5250
Children 1-5 years			r.	r.	3500	3500	3500	3500	3500	3500	3500
Cheese											
Normal Consumer	100	100	50	r.	100	95	75	75	75	50	50
Children 0-5 years	200	200	100	r.	200	200	150	150	150	r.	r.

¹ Including 250 grammes of flour in terms of bread.

² Including 280 grammes of flour in terms of bread.

³ Rice.

⁴ Two meatless days a week.

⁵ Lard and oil.

⁶ Butter.

CANADA

Consumer Category	1942				1943			
	I	II	III	IV	I	II	III	IV
Sugar								
All Consumers	Free	Free	225	225	225	225	225 ¹	225 ¹
Jam, Honey								
All Consumers	Free	Free	Free	Free	Free	Free	115 ²	115 ²
Meat, Meat Prod. (4)								
All Consumers	Free	Free	Free	Free	Free	455 ³	455 ³	455 ³
						1360	1360	1360
Fats (5)								
All Consumers	Free	Free	Free	225	150	225	225	225
Coffee								
All Consumers	Free	Free	115 ⁴	150 ⁴	115 ⁴	115 ⁴	115 ⁴	150 ⁴

Consumer Category	1942				1943				1944			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Bread and Flour (a)												
Normal Consumer	1400	1400	1050	1050	1050	1050	1150 ^b	1150 ^b	1375 ^b	1375 ^b	1375 ^b	1375 ^b
Heavy Worker	2800	2800	2100	2100	2100	2100	r.	r.	r.	r.	r.	r.
Cereals (c)												
Normal Consumer					115	115	115	115	115	115	115	115
Children 0-2 years					55	55	55	55	55	55	55	55
Potatoes												
Normal Consumer					2100	2100	2100	r.	2000	2000	1500	1500
Children 0-2 years					1050	1050	1050	r.	1000	1000	r.	r.
Sugar												
Normal Consumer	375	125	125	125	75	75	75	75	75	75	75	75
Meat, Meat Prod. (d)												
Normal Consumer	300	300	300	150	150	150	250	250	250	250	250	250
Fats (e)												
All Consumers	125	125	150	100	50	75	110	110	110	110	60	60
Liquid Milk												
Children 0-2 years					5250	5250	5250	5250	3500	3500	3500	3500
Children 2-5 years					3500	3500	3500	3500	3500	3500	3500	3500
Cheese												
All Consumers	r.	r.	r.	r.	r.	100	100	100	100	100	100	100
Eggs (pieces)												
All Consumers						1	1	1	1	1	1	1

^a Including 75 grammes of flour in terms of bread.^b Including 250 grammes of flour in terms of bread.

CANADA (Continued)

Consumer Category	1944				1945			
	I	II	III	IV	I	II	III	IV
Sugar								
All Consumers	225 ^a	225	115	115				
Jam, Honey								
All Consumers	115 ^a	Free	Free	Free				
Meat, Meat Prod. (f)								
All Consumers	455- 1360	Free	Free	Free	Free	Free	Free	Free
Fats (g)								
All Consumers	170	170	200	200	170	200		
Coffee								
All Consumers	150 ^a	225 ^a	225 ^a	Free	Free	Free	Free	Free

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Bread and Flour								
Normal Consumer	2900	2650	2650	2250	2250	2250	2250	2250
Children 0-3 years	1300	1300	1300	1100	1100	1100	1100	1100
Children 3-6 years	1300	1300	1300	1100	1100	1100	1100	1100
Children 6-10 years	2100	2100	2100	1900	1900	1900	1700	1700
Children 10-14 years	2900	2650	2650	2250	2250	2250	2250	2250
Heavy Worker	3800	3800	3800	3400	3650	3650	3650	3650
Very Heavy Worker	4800	4800	4800	4400	4650	4650	4650	4650
Cereals (1)								
Normal Consumer	600	355	355	355	410	150	150	185
Children 0-3 years	175	175	175	175	175	175	175	175
Children 3-6 years	175	175	175	175	175	175	175	175
Potatoes								
All Consumers								3000
Sugar								
All Consumers	350	300	300	300	300	300	300	300
Jam, Honey								
Normal Consumer								205
Children 0-3 years								240
Children 3-14 years								240
Meat, Meat Prod. (4)								
Normal Consumer	500	500	575	500	500	500	400	400
Children 0-6 years	250	250	300	250	250	250	250	250
Children 6-14 years	500	500	575	500	500	500	400	400
Heavy Worker	1000	1000	1075	1000	1000	1000	800	800
Very Heavy Worker	1200	1200	1275	1200	1200	1200	1000	1000
Fats (5)								
Normal Consumer	155	155	155	155	155	155	155	175
Children 0-3 years	80	80	125	125	125	125	125	125
Children 3-6 years	80	80	125	125	125	125	125	125
Children 6-14 years	200	200	200	200	200	200	200	200
Heavy Worker	185	275	275	260	275	285	290	280
Very Heavy Worker	340	620	620	565	620	630	645	625
Liquid Milk								
Normal Consumer	r.							
Children 0-3 years	5250	5250	5250	5250	5250	5250	5250	5250
Children 3-6 years	5250	5250	5250	5250	5250	5250	5250	5250
Children 6-14 years	1750	1750	1750	1750	1750	1750	1750	1750
Eggs								
All Consumers	1	1.5	1	1	1.5	3	1	1
Coffee (1)								
Normal Consumer					100	r.	r.	r.
Heavy Worker and Very Heavy Worker					r.	r.	r.	r.

(PROTECTORATE)

1942				1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
2250	2250	2250	2250	2250	2250	2325	2425	2425	2425	2425	2225	2225	1700	1700
1100	1100	1100	1100	1100	1100	1175	1275	1275	1275	1275	1175	1175	1000	1000
1100	1200	1200	1200	1200	1200	1275	1375	1375	1375	1375	1275	1275	1000	1000
1700	1700	1700	1700	1700	1700	1775	2000	2000	2000	2000	2000	2000	2000	2000
2250	2250	2600	2600	2600	2600	2675	2775	2775	2775	2775	2775	2275	2000	2000
3650	3650	3650	3650	3650	3650	3725	3825	3825	3825	3825	3625	3625	2800	2800
4650	4650	4650	4650	4650	4650	4725	4825	4825	4825	4825	4625	4625	3300	3300
150	150	150	150	180	150	250	150	150	150	150	150	150	50	75
175	125	125	125	125	125	125	125	125	125	125	125	125	85	85
175	60	60	60	60	60	60	60	60	60	60	60	60	40	85
3000	3000	3000	3500	3500	3500	2500	2500	2500	2500	2500	3000	3000	2000	2000
300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
205	205	205	205	205	205	205	205	205	205	205	205	205	205	230
235	235	235	235	235	235	235	235	235	235	235	235	235	235	265
235	235	235	235	235	235	235	235	235	235	235	235	235	235	270
400	300	300	350	350	350	250	250	250	250	250	250	250	185	185
250	150	150	200	200	200	100	100	100	100	100	100	100	100	100
400	350	350	400	400	400	300	300	300	300	300	300	300	240	240
800	600	600	700	700	700	600	600	600	600	600	600	600	535	535
1000	850	850	950	950	950	850	850	850	850	850	850	850	785	785
170	175	155	155	165	165	175	175	175	175	175	175	175	100	90
125	125	125	125	125	125	135	135	135	135	135	135	135	70	125
125	125	125	125	125	125	135	135	135	135	135	135	135	100	125
200	200	200	200	200	200	210	210	210	210	210	210	210	150	240
290	285	265	265	265	265	275	275	275	275	275	275	275	155	145
635	630	555	555	575	575	545	545	545	545	545	545	545	305	295
875	875	875	875	330	435	875	875	435	435	435	435	435	435	435
5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	3500
5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	3500	3500
1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
.5	1	1	1	1	1	1	1	1	1	1	.5	1	.5	
125	100	75	75	75	75	75	75	75	75	75	75	75		
r.	r.	110	110	110	110	110	110	110	110	110	110	110		

• Skimmed milk.

DENMARK

Consumer Category	1941				1942			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer	2280	2280	2280	2280	2280	2300	2300	2375 ¹
Children 0-6 years	1190	1190	1190	1190	1190	1220	1210	1205
Heavy Worker	2980	2980	2980	2980	2980	3010	3000	2995
Very Heavy Worker	3680	3680	3680	3680	3680	3710	3700	3695
Cereals (2)								
Normal Consumer	235	235	235	235	235	235	235	310
Children 0-6 years	235	235	235	235	235	235	235	310
Heavy Worker	350	350	350	350	350	350	350	505
Very Heavy Worker	465	465	465	465	465	465	465	700
Sugar								
All Consumers	465	465	700 ²	465 ³	465	465	625 ⁴	465
Fats (Butter)								
All Consumers ⁵	350	350	350	350	315	315	300	300
Coffee (6)								
Normal Consumer	30	30	30	20	r.	r.	r.	r.

NOTE: Salt was rationed in February 1943 at 35 grammes per person per week. For the second and third quarters of 1943, 30 grammes per week.

¹ Including 60 grammes of wheat flour in terms of bread.

² In addition, for the month of December, an extra ration of 140 grammes of white bread or 115 grammes of wheat flour per week.

³ Including 235 grammes per week extra.

DENMARK

1943				1944				1945		
II	III	IV		I	II	III	IV	I	II	III
75 ^a 05 95 95	2375 ^a 1205 2995 3695	2375 ^a 1205 2995 3695	2370 ^a 1285 3070 3770	2370 1285 3070 3770						
310 310 505 700	310 310 505 700	310 310 505 700	310 310 505 700	310 310 310 700						
350	350	505 ^b	350 ^c	350	350 ^d	350	350	350	350	350
300	300	300	300	300	300	300	300	300	300	250
r.	r.	r.	r.	r.	r.	r.	r.	60	60	60

^a In addition, for the month of December, 235 grammes of sugar or 30 grammes of coffee or 10 grammes of tea or 10 grammes of cocoa per week.

^b Including an extra ration of 155 grammes per week.

^c In addition, for the month of December, an extra ration of 235 grammes per week.

^d In addition, for the month of June, an extra ration of 465 grammes per week.

^e In addition, certain extra rations of margarine of 115-150 grammes per week were granted to adults in lower income groups during the first two quarters of 1941.

DENMARK

Consumer Category	1941				1942			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer	2280	2280	2280	2280	2280	2300	2300	2375 ¹
Children 0-6 years	1190	1190	1190	1190	1190	1220	1210	1205
Heavy Worker	2980	2980	2980	2980	2980	3010	3000	2995
Very Heavy Worker	3680	3680	3680	3680	3680	3710	3700	3695
Cereals (2)								
Normal Consumer	235	235	235	235	235	235	235	310
Children 0-6 years	235	235	235	235	235	235	235	310
Heavy Worker	350	350	350	350	350	350	350	505
Very Heavy Worker	465	465	465	465	465	465	465	700
Sugar								
All Consumers	465	465	700 ³	465 ⁴	465	465	625 ⁵	465
Fats (Butter)								
All Consumers ⁶	350	350	350	350	315	315	300	300
Coffee (7)								
Normal Consumer	30	30	30	20	r.	r.	r.	r.

NOTE: Salt was rationed in February 1943 at 33 grammes per person per week. For the second and third quarters of 1943, 30 grammes per week.

¹ Including 60 grammes of wheat flour in terms of bread.

² In addition, for the month of December, an extra ration of 140 grammes of white bread or 115 grammes of wheat flour per week.

³ Including 235 grammes per week extra.

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DENMARK

1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III
2375 ^a	2375 ^a	2375 ^a	2370 ^b	2370	2370	2370	2370	2370	2370	2370
1205	1205	1205	1285	1285	1285	1285	1285	1285	1285	1285
2995	2995	2995	3070	3070	3070	3070	3070	3070	3070	3070
3695	3695	3695	3770	3770	3770	3770	3770	3770	3770	3770
310	310	310	310	310	310	310	310	310	310	310
310	310	310	310	310	310	310	310	310	310	310
505	505	505	505	505	505	505	505	505	505	505
700	700	700	700	700	700	700	700	700	700	700
350	350	505 ^c	350 ^d	350	350	350	350	350	350	350
300	300	300	300	300	300	300	300	300	300	250
r.	r.	r.	r.	r.	r.	r.	r.	60	60	60

^a In addition, for the month of December, 235 grammes of sugar or 30 grammes of coffee or 10 grammes of tea 30 grammes of cocoa per week.

^b Including an extra ration of 155 grammes per week.

^c In addition, for the month of December, an extra ration of 235 grammes per week.

^d In addition, for the month of June, an extra ration of 465 grammes per week.

^e In addition, certain extra rations of margarine of 115-150 grammes per week were granted to adults in lower come groups during the first two quarters of 1941.

DENMARK

Consumer Category	1941				1942			
	I	II	III	IV	I	II	III	IV
Bread and Flour (v)								
Normal Consumer	2280	2280	2280	2280	2280	2300	2300	2375 ¹
Children 0-6 years	1190	1190	1190	1190	1190	1220	1210	1205
Heavy Worker	2980	2980	2980	2980	2980	3010	3000	2995
Very Heavy Worker	3680	3680	3680	3680	3680	3710	3700	3695
Cereals (v)								
Normal Consumer	235	235	235	235	235	235	235	310
Children 0-6 years	235	235	235	235	235	235	235	310
Heavy Worker	350	350	350	350	350	350	350	505
Very Heavy Worker	465	465	465	465	465	465	465	700
Sugar								
All Consumers	465	465	700 ²	465 ³	465	465	625 ³	465
Fats (Butter)								
All Consumers ⁴	350	350	350	350	315	315	300	300
Coffee (v)								
Normal Consumer	30	30	30	20	r.	r.	r.	r.

NOTE: Salt was rationed in February 1945 at 35 grammes per person per week. For the second and third quarters of 1945, 30 grammes per week.

¹ Including 60 grammes of wheat flour in terms of bread.

² In addition, for the month of December, an extra ration of 140 grammes of white bread or 115 grammes of wheat flour per week.

³ Including 335 grammes per week extra.

DENMARK

1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III
2375 ^a	2375 ^a	2375 ^a	2370 ^b	2370	2370	2370	2370	2370	2370	2370
1205	1205	1205	1285	1285	1285	1285	1285	1285	1285	1285
2995	2995	2995	3070	3070	3070	3070	3070	3070	3070	3070
3695	3695	3695	3770	3770	3770	3770	3770	3770	3770	3770
310	310	310	310	310	310	310	310	310	310	310
310	310	310	310	310	310	310	310	310	310	310
505	505	505	505	505	505	505	505	505	505	505
700	700	700	700	700	700	700	700	700	700	700
350	350	505 ^c	350 ^d	350	350 ^e	350	350	350	350	350
300	300	300	300	300	300	300	300	300	300	250
r.	r.	r.	r.	r.	r.	r.	r.	60	60	60

^a In addition, for the month of December, 235 grammes of sugar or 30 grammes of coffee or 10 grammes of tea or 30 grammes of cocoa per week.

^b Including an extra ration of 155 grammes per week.

^c In addition, for the month of December, an extra ration of 235 grammes per week.

^d In addition, for the month of June, an extra ration of 465 grammes per week.

^e In addition, certain extra rations of margarine of 115-150 grammes per week were granted to adults in lower income groups during the first two quarters of 1941.

Consumer Category	1940		1941				1942			
	III	IV	I	II	III	IV	I	II	III	IV
Bread and Flour¹ (b), (c)										
Normal Consumer	2080	1730	1730	1615	1385	1385	1385	1385	1385	1615
Children 0-1 year	1560	1385	1385	1385	1385	1385	1385	1040	1040	1040
Children 1-3 years	1560	1385	1385	1385	1385	1385	1385	1385	1385	1385
Adolescents 14-17 yrs.	2080	1730	1730	1615	1385	1385	1730	1730	1730	1960
Light Worker	2080	1730	1730	1615	1385	1730	1730	1730	1730	1960
Heavy Worker	3110	3110	2780	2100	2100	2100	2450	2450	2450	2660
Very Heavy Worker	4150	4150	3750	2955	2955	2955	3140	3140	3140	3355
Potatoes										
All Consumers	l. r.									
Sugar										
Normal Consumer	210	175	190	230	365	290	290	230	175	135
Children 0-1 year	210	-	-	-	-	-	-	-	-	-
Children 1-17 years	210	175	190	230	265	290	290	230	175	135
Light Worker	210	175	190	230	365	290	290	230	175	135
Heavy Worker and Very Heavy Worker	210	175	190	230	365	290	365	290	175	135
Meat, Meat Prod. (d)										
Normal Consumer			370	285	170	270	160	115	100	135
Heavy Worker			270	350	335	470	315	200	150	180
Very Heavy Worker			370	350	335	470	315	235	200	235
Fats (e)										
Normal Consumer		175	200	220	175	115	75	90	90	100
Children 0-1 year		175	200	270	200	160	115	140	140	150
Children 1-17 years		175	200	270	200	160	115	140	140	150
Light Worker		175	200	220	175	115	90	115	115	130
Heavy Worker		175	200	280	230	180	115	140	140	150
Very Heavy Worker		280	200	280	230	180	115	140	140	150
Liquid Milk										
Normal Consumer			2100	2100	2100	1500	1400	1400	1400	1400
Children 0-1 year			7000	7000	7000	7000	7000	7000	7000	7000
Children 1-17 years			4200	4200	4200	4200	4200	4200	4200	4200
Cheese³										
All Consumers	l. r.									
Eggs⁴										
All Consumers	l. r.									
Coffee⁴ (f)										
All Consumers	70	115	75	75	75	75	40	40	40	40

¹ Including cereals and cereal products of all kinds. The data given above are given in terms of flour.² Children 0-6 months 235 grammes; children 6 months 350 grammes; children 6-12 months 175 grammes.

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FINLAND

1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III
1730	1730	1560	1730	1730	1730	1730	1730	1730	1615	1615
1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040
1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385
2080	2080	1920	2080	2080	2080	2080	2080	2080	1770	1770
2080	2080	1920	2080	2080	2080	2080	2080	2080	1770	1770
2770	2770	2600	2700	2770	2770	2770	2770	2770	2310	2310
3460	3460	3140	3140	3110	3110	3110	3110	3110	2650	2650
I. r.										
115	55	95	80	115	115	155	135	115	95	95
115	55	95	80	115	115	155	135	115	95	95
115	55	95	80	115	115	155	135	115	95	95
115	55	95	80	115	115	155	135	115	95	95
100	120	75	230	200	360	215	625	155	110	160
150	150	100	315	260	435	290	840	230	170	240
200	190	130	405	330	520	385	840	230	170	240
I. r.										
115	110	150	190	115	115	115	115	115	115	115
160	160	160	175	175	175	175	175	175	175	175
160	160	200	250	175	175	175	175	175	175	175
140	140	180	250	175	175	175	175	175	175	175
160	160	200	250	175	175	175	175	175	175	175
160	160	200	250	175	175	175	175	175	175	175
1400	1800	2100	2100	2100	2100	2100	1600	1400	1600	1600
7000	7000	7000	7000	6500	6300	6300	6300	6300	6300	6300
4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200
I. r.										
I. r.										
60	60	60	60	60	60	60	60	60	60	60

¹ Towns and densely populated areas.
² Substitute after 1941.

Consumer Category	1941				1942			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer	2350	1925	1925	1925	1925	1925	1925	1925
Children 0-3 years	800	700	780 ²					
Children 3-6 years	1500	1400	1480 ²					
Children 6-13 years	2200	1925	1925	1925	1925	1925	1925	1925
Young people 13-21 yrs.	2200	1925	2450	2450	2450	2450	2450	2450
People over 70 years	1500	1400	1480 ²					
Heavy Worker	2900	2450	2450	2450	2450	2450	2450	2450
Cereals (2)								
Normal Consumer	140	100		60	60			
Children 0-3 years	160	140	45	135	135	75	75	75
Children 3-6 years	140	100	0	110	110	50	50	50
Potatoes								
All Consumers	l. r.	l. r.	l. r.	l. r.	l. r.	l. r.	l. r.	l. r.
Sugar								
Normal Consumer	115	115	115	115	115	115	115	115
Children 0-3 years	235	235	235	235	235	235	235	290
Children 3-6 years	115	115	115	115	115	115	115	115
Young people 13-21 yrs.	115	115	115	115	115	115	115	115
Meat, Meat Prod. (4)								
Normal Consumer	360	250	250	250	180 ³	180 ³	180 ³	180 ³
Young people 13-21 yrs.	360	250	250	250	125	125	125	125
Heavy Worker	360	355	355	355	180 ³	180 ³	265 ³	265 ³
Very Heavy Worker	360	460	460	460	125	125	210	210
Fats (5)					285 ³	285 ³	285 ³	285 ³
Normal Consumer	100	125	120	100	230	230	230	230
Children 0-3 years	100	125	120	100	170	170	170	170
Heavy Worker	100	195	220	170	240	240	240	240
Very Heavy Worker	100	265	290	240	390 ³	390 ³	390 ³	390 ³
335	335	335	335	335	335	335	335	335
Liquid Milk								
Children 0-3 years ⁷	5250	5250	5250	5250	5250	5250	5250	5250
Children 3-6 years	5250	5250	5250	5250	5250	5250	5250	5250
Children 6-13 years	1750	1750	1750	1750	1750	1750	1750	1750
Cheese								
All Consumers	50	70	60	50	50	50	50	50
Eggs								
All Consumers	l. r.	l. r.	l. r.	l. r.	l. r.	l. r.	l. r.	l. r.
Coffee (6)								
All Consumers	60				35	35	35	35

* Including 60 grammes of flour in terms of bread.

* Including 155 grammes of flour in terms of bread.

* Including 125 grammes of flour in terms of bread.

1943				1944				1945			
I	II	III	IV	I	II	III	IV	I	II	III	IV
1925	1925	1925	2100	2100	2100	2100	2450	2450	2450	2450	Free
780 ^a	780 ^a	780 ^a	955 ^a	955 ^a	1040	1040 ^a	875	1025 ^a	1025 ^a	1025 ^a	Free
1480 ^a	1480 ^a	1480 ^a	1655 ^a	1655 ^a	1740	1740 ^a	1750	1900 ^a	1900 ^a	1900 ^a	Free
1925	1925	1925	2100	2100	2100	2100	2450	2450	2450	2450	Free
2450	2450	2450	2625	2625	2625	2625	2625	2625	2625	2625	Free
1480 ^a	1480 ^a	1480 ^a	1655 ^a	1655 ^a	1655 ^a	1655 ^a	2450	2450	2450	2450	Free
2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	Free
75	75	75	50	70	75	25	140	140	160	160	
50	50	50	50	50	50	25	115	115	115	115	
l. r.	l. r.										
115	115	175	115	115	115	115	115	115	115	115	115
290	290	290	290	290	290	290	290	290	290	290	115
115	115	115	115	115	145	145	115	115	145	145	145
175	175	175	175	175	175	175	175	175	175	175	115
180- ^b	120	120	120	120	120	180	180- ^b	150- ^b	100	100- ^b	
125							250	250		150	
265- ^b	205	205	205	205	205	160	r.	150- ^b	150- ^b	150- ^b	
210								250	250	250	
285- ^b	225	225	225	225	225	225	r.	250	250	250	
230											
390- ^b	330	330	330	330	330	330	r.	250	250	250	
335											
70- ^b	70- ^b	70- ^b	70- ^b	35- ^b	40- ^b	40- ^b	60- ^b	60- ^b	115	115	
55	55	55	55	25	30	30	40	40			
r.	60- ^b	60- ^b	70	70							
40							40	40			
145	140- ^b	140- ^b	140- ^b	90- ^b	95- ^b	90- ^b	r.	85- ^b	140	140	
120	120	120	120	80	85	80		65			
220	210- ^b	210- ^b	210- ^b	140- ^b	145- ^b	145- ^b	r.	150- ^b	160	160	
190	190	190	190	130	135	135		130			
5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250
5250	5250	5250	5250	5250	3500	5250	5250	5250	5250	5250	5250
1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
50	50	50	50	50	50	50	20	20	20	20	
l. r.	l. r.										
35	35	35	35	35	35	35	35	35	35	35	

^a Excluding permitted family slaughter.^b Urban and rural areas respectively.^c Including pregnant women and persons on special diets.

[136]
GERMANY

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Bread and Flour (M)								
Normal Consumer	2400	2400	2250	2250	2250	2250	2250	2250
Children 0-3 years	1100	1100	1100	1100	1100	1100	1100	1100
Children 3-6 years	1100	1100	1100	1100	1100	1100	1100	1100
Children 6-10 years	1700	1700	1700	1700	1700	1700	1700	1700
Young persons 10-20 yrs.	2400	2400	2600	2600	2600	2600	2600	2600
Night Worker	2850	2850	2850	2850	2850	2850	2850	2850
Heavy Worker	3800	3800	3650	3650	3650	3650	3650	3650
Very Heavy Worker	4800	4800	4650	4650	4650	4650	4650	4650
Cereals (S)								
Normal Consumer	75-	75-	75-	75-	75-	75-	75-	75-
	150	150	150	150	150	150	150	150
Children 0-3 years	275	275	275	275	275	275	275	275
Children 3-6 years	210	210	210	210	210	210	210	210
Potatoes								
All Consumers	Free							
Sugar¹								
All Consumers	250	225	225	225	225	225	225	225
Jam, Honey								
Normal Consumer	110	160	160	160	185	185	185	185
Children 0-6 years	130	180	180	180	205	205	205	205
Children 6-14 years	230	230	230	230	255	255	255	255
Meat, Meat Prod. (4)								
Normal Consumer	500	500	500	500	500	500	400	400
Children 0-6 years	250	250	250	250	250	250	250	250
Young persons 6-20 yrs.	500	500	500	500	500	500	400	400
Night Worker	600	600	600	600	600	600	600	600
Heavy Worker	1000	1000	1000	1000	1000	1000	800	800
Very Heavy Worker	1200	1200	1200	1200	1200	1200	1000	1000
Fats (S)								
Normal Consumer	270	270	270	270	270	270	270	270
Children 0-3 years	125	125	125	125	125	125	125	125
Children 3-6 years	190	190	190	190	190	190	190	190
Children 6-14 years	260	265	265	265	265	265	265	265
Young persons 14-20 yrs.	300	300	300	300	300	300	300	300
Night Worker	290	290	290	290	290	290	290	290
Heavy Worker	395	395	395	395	395	395	395	395
Very Heavy Worker	740	740	740	740	740	740	740	740
Liquid Milk³								
Normal Consumer ³	0	0	0	0	l. r.	l. r.	l. r.	l. r.
Children 0-3 years	5250	5250	5250	5250	5250	5250	5250	5250
Children 3-6 years	3500	3500	3500	3500	3500	3500	3500	3500
Children 6-14 years	1750	1750	1750	1750	1750	1750	1750	1750
Cheese and Curds⁴								
All Consumers	65	65	65	65	65	65	65	65
Eggs								
All Consumers	l. r.							
Coffee (5)								
Normal Consumer					100	100	100	100

GERMANY

HUNGARY

Consumer Category	1942				1943			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer	2350 ¹	2000 ¹	1660 ²	1660 ²	1640 ³	1640 ³	2050 ⁴	2660 ⁴
Heavy Worker	3400 ¹	3050 ¹	2710 ²	2710 ²	2480 ³	2480 ³	3100 ⁴	3710 ⁴
Very Heavy Worker	4800	4450 ¹	4110 ²	4110 ²	3600 ³	3600 ³	4500 ⁴	5110 ⁴
Cereals (2)								
All Consumers	50	50	100	100	r.	r.	r.	r.
Potatoes								
All Consumers	l. r.	l. r.	l. r.	2000 ⁵	2000 ⁵	1000 ⁵	l. r.	2000
Sugar								
Normal Consumer	260- 80 ⁶							
Children 0-14 years	260- 130 ⁶							
Meat, Meat Prod. (4)								
All Consumers					l. r.	l. r.	l. r.	l. r.
Fats (5)								
Normal Consumer	160	160	160	140	140	140	140	140
Heavy Worker	250	250	250	225	225	225	225	225
Liquid Milk								
Children 0-3 years ^{6,7}			7000	7000	5000	5000	5250	5250
Children 3-14 years ⁸			3500	3500	3500	3500	3500	3500
Eggs								
All Consumers							2	2
Coffee (9)								1
All Consumers	l. r.							

¹ Including 460 grammes of flour in terms of bread.² Including 300 grammes of flour in terms of bread.³ Including 400 grammes of flour in terms of bread.⁴ Including 700 grammes of flour in terms of bread.

HUNGARY

Consumer Category	1944				1945
	I	II	III	IV	I
Bread and Flour					
Normal Consumer	2660 ⁴	2660 ⁴	2400 ⁵	1400	1400
Heavy Worker	3710 ⁴	3710 ⁴	3710 ⁴	2240	2450
Very Heavy Worker	5110 ⁴	5110 ⁴	5110 ⁴	3360	3950
Cereals (6)					
All Consumers	r.	r.	125	125	125
Potatoes					
All Consumers	2000	2000	3000	3000	3000
Sugar					
Normal Consumer	260- 80 ⁶	260- 80 ⁶	260- 80 ⁶	125- 80 ⁶	60- 40 ⁶
Children 0-14 years	260- 130 ⁶	260- 130 ⁶	260- 130 ⁶	125	125
Meat, Meat Prod. (6)					
All Consumers	l. r.	l. r.	l. r.	l. r.	l. r.
Fats (6)					
Normal Consumer	140 ⁵	140 ⁵	140 ⁵	140 ⁵	140 ⁵
Heavy Worker	225 ⁵	225 ⁵	225 ⁵	225 ⁵	225 ⁵
Liquid Milk					
Children 0-3 years ^{5,7}	5250	5250	5250 ⁸	5250 ⁸	5250 ⁸
Children 3-14 years ⁵	3500	3500	3500	3500	3500
Eggs					
All Consumers	1	1	1	1	1
Coffee (9)					
All Consumers	l. r.	l. r.	l. r.	l. r.	l. r.

⁴ Budapest.⁵ Budapest and rural areas respectively.⁶ Including nursing and expectant mothers.⁷ Children under 1 year 7000 grammes.

IRELAND

¹ Metropolitan areas only.

• Including 55 grammes of margarine.

ITALY

IRELAND

1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III
30	20	20	20	20	20	15	20	20	15	30
225	340	340	340	340	340	340	340	340	340	225
115	115	225								
225 ^a	225	225	225	170	170	170	225	225 ^a		
45	44	25	25	33½	40	33½	45	33½	50	33½

¹ Percentages of quantities purchased during the year ended March 31, 1941.

ITALY

THE NETHERLANDS

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer	Free	2000	2080 ¹	2090 ¹	2090 ¹	2390 ¹	2090 ¹	1890 ¹
Children 0-4 years	Free	2000	1480 ¹	1090 ¹	1090 ¹	1240 ¹	1090 ¹	990 ¹
Children 5-14 years	Free	2000	2080 ¹	2090 ¹	2090 ¹	2390 ¹	2090 ¹	1890 ¹
Young people 15-20 yrs.	Free	2000	2080 ¹	2340 ¹	2490 ¹	2840 ¹	2490 ¹	2290 ¹
Long-term and night labourer	Free	2000	2080 ¹	2290 ¹	2590 ¹	2890 ¹	2590 ¹	2390 ¹
Heavy Worker	Free	3000	3080 ¹	3090 ¹	3090 ¹	3540 ¹	3090 ¹	2790 ¹
Very Heavy Worker	Free	4000	4080 ¹	4090 ¹	4090 ¹	4690 ¹	4090 ¹	3690 ¹
Cereals² (2)								
Normal Consumer	60	30	155	220	275	320	150	150
Children 0-4 years	60	30	405	330	395	440	285	275
Children 5-14 years	60	30	155	220	275	320	150	150
Young people 15-20 yrs.	60	30	155	220	275	320	150	150
Heavy Worker	60	30	155	220	275	320	150	150
Very Heavy Worker	60	30	155	220	275	320	150	150
Potatoes								
Normal Consumer	Free	Free	Free	Free	Free	1500	3000	3500
Children 0-4 years	Free	Free	Free	Free	Free	750	1500	1750
Children 5-14 years	Free	Free	Free	Free	Free	1500	3000	3500
Young people 15-20 yrs.	Free	Free	Free	Free	Free	1500	3000	3250
Long-term and night labourer	Free	Free	Free	Free	Free	1500	3000	3500
Heavy Worker	Free	Free	Free	Free	Free	2250	4500	5250
Very Heavy Worker	Free	Free	Free	Free	Free	3000	6000	7000
Sugar								
All Consumers	335	275	335	325	250	300	250	250
Jam, Honey								
All Consumers	Free	Free	Free	Free	Free	Free	125	120
Meat, Meat Prod. (3)								
Normal Consumer	Free	Free	500	440	350	225	265	300
Children 0-4 years	Free	Free	300	205	130	125	135	150
Children 5-14 years	Free	Free	500	440	350	225	265	300
Young people 15-20 yrs.	Free	Free	500	440	350	225	265	300
Long-term and night labourer	Free	Free	500	480	450	340	365	400
Heavy Worker	Free	Free	700	650	500	355	400	450
Very Heavy Worker	Free	Free	1100	1060	855	590	660	750
Fats (4)								
Normal Consumer	Free	Free	250	250	250	200	200	195
Children 0-4 years	Free	Free	165	125	125	100	100	110
Children 5-14 years	Free	Free	250	250	250	200	200	220
Young people 15-20 yrs.	Free	Free	250	250	250	200	200	220
Long-term and night labourer	Free	Free	250	260	270	220	220	210
Heavy Worker	Free	Free	350	375	375	300	300	290
Very Heavy Worker	Free	Free	665	750	750	600	600	580

THE NETHERLANDS

1942				1943				1944		
I	II	III	IV	I	II	III	IV	I	II	III
1890 ^a	1890 ^a	2190 ^a	2170 ^a	2170 ^a	2170 ^a	2170 ^a				
990 ^a	990 ^a	890 ^a	870 ^a	870 ^a	870 ^a	870 ^a				
1890 ^a	1890 ^a	2190 ^a	2170 ^a	2170 ^a	2170 ^a	2170 ^a				
2290 ^a	2290 ^a	2590 ^a	2570 ^a	2570 ^a	2570 ^a	2570 ^a				
2390 ^a	2390 ^a	2690 ^a	2670 ^a	2670 ^a	2670 ^a	2670 ^a				
2790 ^a	2790 ^a	3090 ^a	3070 ^a	3070 ^a	3070 ^a	3070 ^a				
3690 ^a	3690 ^a	3990 ^a	3970 ^a	3970 ^a	3970 ^a	3970 ^a				
230	275	185	145	180	185	155	155	135	150	175
355	400	310	270	305	415 ^b	405 ^b	405 ^b	385 ^b	400 ^b	430 ^b
230	275	185	145	180	185	155	155	135	150	175
230	275	185	145	180	185	155	155	135	150	175
230	275	185	145	180	185	155	155	135	150	175
230	275	185	145	180	185	155	155	135	150	175
250	250	250	250	250	250	250	250	250	250	250
3500	2500	3000	4000 ^b	2750						
1750	1250	1500	2000	2000	2000	2500	2000	2000	2000	1500
3500	2500	3000	4000	4000	4000	4000	4000	4000	4000	2750
5250	3750	4500	6000	6000	6000	5500	6000	6000	6000	4000
3500	2500	3000	4500	4500	4500	4750	5000	5000	5000	3250
5250	3750	4500	6000	6000	6000	5500	6000	6000	6000	4000
7000	5000	6000	8000	8000	8000	7000	8000	8000	8000	5500
250	250	250	250	250	250	250	250	250	250	250
125	125	125	125	125	125	125	145	145	125	125
250	250	300	280	200	105	115	125	125	125	125
125	125	150	140	110	105	115	125	125	125	125
250	250	300	280	200	105	115	125	125	125	125
250	250	300	280	200	105	115	125	125	125	125
350	350	400	380	300	190	200	225	225	225	225
375	375	450	420	320	260	270	300	300	300	300
625	625	750	700	530	425	455	500	500	500	500
210	190	145	150	160	125	145	145	140	125	125
120	110	85	95	95	70	105	145	130	110	115
240	220	175	180	180	140	190	220	205	175	175
240	220	175	180	180	140	190	220	205	175	175
240	190	175	180	190	150	175	175	170	155	155
320	285	220	225	230	185	220	220	210	185	185
640	570	440	445	450	370	440	440	420	375	375

THE NETHERLANDS (*Continued*)

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Liquid Milk								
Normal Consumer	Free	Free	Free	Free	Free	1750	0	0
Children 0-4 years	Free	Free	Free	Free	Free	7000	7000	7000
Children 5-14 years	Free	Free	Free	Free	Free	3500	3500	3500
Young people 15-20 yrs.	Free	Free	Free	Free	Free	1750	0	0
Cheese								
All Consumers	Free	Free	Free	110	110	100	100	105
Eggs								
All Consumers	Free	Free	Free	1	1	1	1	l. r.
Coffee (9)								
Adult Consumers	Free	Free	55	0	15	0	0	0

⁹ Including 60 grammes of flour in terms of bread.

¹⁰ Including 65 grammes of flour in terms of bread.

¹¹ Including 70 grammes of flour in terms of bread and 300 grammes of biscuit.

¹² Including 70 grammes of flour in terms of bread and 280 grammes of biscuit.

¹³ Including groats, rice, vermic, pulse, and oatmeal. During the last quarter of 1939 a pulse ration of 125 grammes per week was given to all consumers.

THE NETHERLANDS (*Continued*)

1942				1943				1944		
I	II	III	IV	I	II	III	IV	I	II	III
0	0	1750 ^a	1750 ^a	1400 ^a	1500 ^a	1750 ^a	1750 ^a	1500 ^a	1750 ^a	1750 ^a
7000	7000	7000	5250	5250	5250	5250	5250	5250	5250	5250
3500 ^b	3500 ^b	3500 ^b	3500 ^b	2625 ^b	3000 ^b	3500 ^b	3500 ^b	3000 ^b	3500 ^b	3500 ^b
0	0	1750 ^a	1750 ^a	1400 ^a	1500 ^a	1750 ^a	1750 ^a	1500 ^a	1750 ^a	1750 ^a
125	125	100	75	75	75	75	60	60	60	65
I. r.										
30	60	60	60	60	60	60	30	30	40	40

^a For this period rations available only for infants 2-3 years of age; others received same rations as 5-14 years.

^b Extra 1000 grammes for lowest income group.

^c Skimmed milk.

^d Nursing and expectant mothers received the same rations.

NORWAY

Consumer Category	1941				1942			
	I	II	III	IV	I	II	III	IV
Bread (1)								
Normal Consumer	2080	2080	1820	1820	1820	1820	1820	1820
Children 0-2 years	2080	2080	1820	1820	910	910	910	910
Children 2-5 years	2080	2080	1820	1820	910	910	1140	1140
Young people 12-19 yrs.								
Boys	2080	2080	2050	2050	2050	2050	2050	2050
Girls	2080	2080	1820	1820	1820	1820	1820	1820
Heavy Worker	2990	2990	2960	2960	2960	2960	2960	2960
Very Heavy Worker	3900	3900	3870	3870	3870	3870	3870	3870
Potatoes								
Normal Consumer	Free	Free	Free	Free	Free	Free	Free	3000
Heavy Worker	Free	Free	Free	Free	Free	Free	Free	4500
Very Heavy Worker	Free	Free	Free	Free	Free	Free	Free	5250
Sugar								
All Consumers	200	200	200	200	200	200	200	200
Meat, Meat Prod. (2)								
Normal Consumer			r.	r.	r.	r.	r.	r.
Heavy Worker with 2 or more additional cards for bread			r.	r.	r.	r.	r.	300
Fats, Butter, etc. (3)								
Normal Consumer	315	280	280	280	210	210	210	210
Heavy Worker	315	280	280	280	245	245	245	245
Very Heavy Worker	315	315	315	315	315	315	315	315
Liquid Milk^a								
Normal Consumer	Free	Free	Free	Free	1750 ^a	1750 ^a	1750 ^a	1750 ^a
Children 0-5 years	Free	Free	Free	Free	5250	5250	5250	5250
Children, Adolescents (6-18 years)	Free	Free	Free	Free	3500	3500	3500	3500
Cheese								
All Consumers	r.	r.	r.	r.	r.	r.	r.	r.
Eggs								
All Consumers	r.	r.	r.	0	0	0	0	0
Coffee (4)								
Normal Consumer (12 years or more)	60 ^a	50 ^a	50 ^a	50 ^a	40 ^a	40 ^a	40 ^a	40 ^a
Chocolate								
Children 0-11 years ^b	110	110	75	75	50	40	40	40

^a Up to the second quarter of 1945, normal consumers got their rations in skimmed milk and adolescents 16-18 years old half rations in skimmed milk.

^b Maximum rations. The real rations were lower.

NORWAY

1943				1944				1945			
I	II	III	IV	I	II	III	IV	I	II	III	IV
1820	1820	1820	1820	1820	1820	1820	1820	1820	1820	1820	2275
910	910	910	910	910	910	910	910	910	910	910	1365
1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	2275
2050	2050	2050	2050	2505	2505	2505	2505	2505	2505	2505	2960
1820	1820	1820	1820	2275	2275	2275	2275	2775	2775	2775	2730
2960	2960	2960	2960	3185	3185	3185	3185	3185	3185	3185	3640
3870	3870	3870	3870	4325	4325	4325	4325	4325	4325	4325	4780
3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
5250	5250	5250	6000	6000	6000	6000	5250	5250	5250	5250	5250
200	200	200	200	200	200	200	200	200	200	200	200
r.											
300	300	300	300	300	300	300	300	300	300	r.	r.
210	210	210	210	210	210	210	210	210	210	210	350
245	245	245	245	245	245	245	245	245	245	245	385
315	315	315	315	315	315	315	315	315	315	315	455
1750*	1750*	1750*	1750*	1750*	1750*	1750*	1750*	1750*	1750*	1750*	1750*
5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250
3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
r.											
0	0	0	0	0	0	0	0	0	0	0	0
40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	50
40											40

* 20 grammes substitute.

** 40 grammes substitute.

Until February 28, 1941 only to children 2-11 years. From March 1, 1942 to March 31, 1942 also to children 12 and 13 years old.

POLAND I: GOVERNMENT GENERAL

POLAND I: GOVERNMENT GENERAL

Consumer Category	1943				1944			
	I	II	III	IV	I	II	III	IV
Bread and Flour (M)								
Normal Consumer	r.	r.	r.	2095	2250	2100	2100	2100
Children 0-14 years	r.	r.	r.	1045	1125	1050	1050	1050
Heavy Worker	r.	r.	r.	2655- 3395	2850	2660- 3410	2660- 3410	2660- 3410
Cereals (4)								
Normal Consumer	r.	r.	r.	45 ⁴	50	50	50	50
Children 0-14 years	r.	r.	r.	70 ⁴	75	75	75	75
Privileged Consumer	r.	r.	r.	45 ⁴	125	110	110	110
Heavy Worker	r.	r.	r.	105 ⁴	125	110	110	110
Potatoes								
Normal Consumer	r.	r.	r.	1925	2000	2000	2000	2000
Children 0-14 years	r.	r.	r.	1925	2000	2000	2000	2000
Privileged Consumer	r.	r.	r.	5770- 2885	4000	6000	6000	6000
Heavy Worker	r.	r.	r.	5770	4000	6000	6000	6000
Sugar								
Normal Consumer	r.	r.	r.	70	75	75	75	75
Children 0-14 years	r.	r.	r.	70	75	75	75	75
Heavy Worker	r.	r.	r.	100- 130	105- 135	105- 135	105- 135	105- 135
Jam, Honey								
Normal Consumer	r.	r.	r.	115	125	125	125	125
Children 0-14 years	r.	r.	r.	115	r.	r.	r.	r.
Heavy Worker	r.	r.	r.	175	185	185	185	185
Meat, Meat Prod. (4)								
Normal Consumer	r.	r.	r.	95	100	100	100	100
Children 0-14 years	r.	r.	r.	95	100	100	100	100
Privileged Consumer	r.	r.	r.	210- 190	225	225	225	225
Heavy Worker	r.	r.	r.	280- 375	300- 400	300- 400	300- 400	300- 400
Fats (4)								
Normal Consumer	r.	r.	r.	r.	r.	r.	r.	r.
Privileged Consumer	r.	r.	r.	115- 30	125	125	125	125
Heavy Worker	r.	r.	r.	140- 210	150- 225	150- 225	150- 225	150- 225
Milk								
Children 0-6 years	r.	r.	r.	r.	r.	r.	r.	r.
Children 6-14 years	r.	r.	r.	r.	r.	r.	r.	r.
Cheese								
All Consumers	r.	r.	r.	r.	r.	r.	r.	r.
Eggs								
Normal Consumer								
Children 0-14 years								
Coffee (4)								
Normal Consumer	r.	r.	r.	r.	30	30	30	30
Children 0-14 years	r.	r.	r.	r.	r.	r.	r.	r.
Heavy Worker	r.	r.	r.	30	30	30	30	30

POLAND II: WARTHeland

Consumer Category	1941			
	I	II	III	IV
Bread and Flour (b)				
Normal Consumer	r.	r.	2250	2250
Children 0-6 years	r.	r.	1100	1100
Children 6-14 years	r.	r.	r.	r.
Heavy Worker	2075	2075	2075	2075
Cereals (c)				
Normal Consumer	225	r.	225	225
Children 0-6 years	r.	r.	r.	r.
Children 6-14 years	r.	r.	r.	r.
Potatoes				
Normal Consumer	r.	r.	2500	2500
Heavy Worker	5250	5250	5250	5250
Sugar				
Normal Consumer	250	r.	250	250
Children 0-14 years	250	r.	250	250
Heavy Worker	125	125	125	125
Jam, Honey				
Normal Consumer	250	r.	100	100
Children 0-14 years	r.	r.	r.	r.
Meat (d)				
Normal Consumer	200-250	r.	250	150
Children 0-6 years	100	r.	100	r.
Children 6-14 years	100	r.	100	r.
Heavy Worker	250	250	250	250
Fats (e)				
Normal Consumer	100	r.	100	100
Children 0-14 years	75	r.	50	65
Heavy Worker	125	125	125	125
Milk				
Children 0-6 years	3500	r.	r.	3500
Children 6-14 years	1750	r.	r.	1750
Cheese				
All Consumers				30

POLAND II: WARTHeland

1942				1943 ¹			
I	II	III	IV	I	II	III	IV
2250	2000	2000	2250	2000	2000	2000	2000
1100	1100	1100	1100	1050	1050	1050	1050
2250	2250	2250	2250	1050	1050	1050	1050
2085	2085	2085	2085	r.	r.	r.	2660-2675
225	110	110	110	110	110	110	110
225	110	110	110	125	125	125	125
150	r.	r.	r.	r.	r.	r.	r.
2225	2500	2500	2500	2225	2225	2225	2225
5270	5270	5270	5270	r.	r.	r.	5300
250	225	225	225	225	225	225	225
225	225	225	225	125	125	125	125
125	125	125	125	r.	r.	r.	100-130
100	100	100	100	100	100	100	100
125	100	100	100	150	150	150	150
250	150	150	150	150	150	150	150
80	80	80	80	75	75	75	75
150	150	150	150	75	75	75	75
250	250	250	250	r.	r.	r.	280-375
110	80	80	80	80	80	80	80
80	80	80	80	80	80	80	80
125	125	125	125	r.	r.	r.	140-210
1750	3500	3500	3500	1750	1750	1750	1750
r.	1750	1750	1750	r.	r.	r.	r.
30	30	30	30	30	30	30	30

¹ Average for 1943.

Consumer Category	1942 ^a				1943				1944			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Bread and Flour (M) All Consumers		1800	2010 ^b	2010 ^b	1850	2240	2240	2000	2000	2000	2000	2000
Sugar Normal Consumer Children 0-3 years	150	75	150	150	150	150	110	125 230	125 250	125 250	75 250	75 250
Meat, Meat Prod. (4) All Consumers	400	200	125	125	125	125	125	125	100			
Fats (4) All Consumers		25	25	230	230	230	230	230	230	230	230	230

^a Belgrade.^b Including 125 grammes of flour in terms of bread.

SLOVAKIA

Consumer Category	1942				1943			
	I	II	III	IV	I	II	III	IV
Bread and Flour (M) Normal Consumer Children 0-1 year	1670	1670	1510 ^b	1545 ^b	1545 ^b	1545 ^b	1505 ^b	1505 ^b
Heavy Worker	325	325	325	325	325	325	325	325
Very Heavy Worker	2000	2000	1850	1855 ^b	1855 ^b	1805 ^b	1805 ^b	1805 ^b
	3320	3075	3000 ^b	3100 ^b	3100 ^b	3010 ^b	3010 ^b	3010 ^b
Potatoes All Consumers					3000	3000	3000	3000
Sugar Normal Consumer	250	250	190 ^b	175 ^b				
Children 0-6 years	375	375	210 ^b	300 ^b				
			375	355	350	355	355	355
Meat, Meat Prod. (4) Normal Consumer	400	300	300	400	400	400	400	200
Heavy Worker	600	450	450	600	600	600	600	300
Fats (4) Normal Consumer Children 0-14 years				60	60	60	60	60
Heavy Worker				120	125	125	125	125
				120	120	120	120	120
Liquid Milk Normal Consumer		700	700	700	700	700	700	700
Children 0-1 year		5000	5000	5000	5000	5250	5250	5250
Children 1-14 years ^c		3500	3500	3500	3500	3500	3500	3500
Eggs (pieces) All Consumers				3	3	3	3	2

^a Including 400 grammes of flour in terms of bread.^b Including 150 grammes of flour in terms of bread.^c Including 475 grammes of flour in terms of bread.^d Extra rations of rice, semolina, oatmeal and biscuits to children.

SLOVAKIA

Consumer Category	1944				1945
	I	II	III	IV	I
Bread and Flour (*)					
Normal Consumer	1670 ³	1670 ³	1535 ⁴	1540 ⁴	1540 ⁴
Children 0-1 year	4	4	4	4	4
Heavy Worker	1970 ³	1970 ³	1855 ⁴	1855 ⁴	1855 ⁴
Very Heavy Worker	3010 ⁴	3010 ⁴	3080 ⁴	3080 ⁴	3080 ⁴
Potatoes					
All Consumers	3000	3000	3000	2500	2500
Sugar					
Normal Consumer	175- ⁷				
	230	230	230	230	230
Children 0-6 years	300- ⁷				
	355	355	355	355	355
Meat, Meat Prod. (4)					
Normal Consumer	200	200	200	200	200
Heavy Worker	300	300	300	300	300
Fats (4)					
Normal Consumer	60	60	60	60	60
Children 0-14 years	125	125	125	125	125
Heavy Worker	120	120	120	120	120
Liquid Milk					
Normal Consumer	700	700	700	700	700
Children 0-1 year	5250	5250	5250	5250	4900
Children 1-14 years ⁵	3500	3500	3500	3500	3500
Eggs (pieces)					
All Consumers	1	1	1	1	1

* Including 690 grammes of flour in terms of bread.

⁴ Including 700 grammes of flour in terms of bread.

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer	Free	Free	Free	1885	1845	1780	1625	1625
Children 0-3 years	Free	Free	Free	1885	1845	1780	1625	1355
Children 4-6 years	Free	Free	Free	1885	1845	1780	1625	1625
Persons 7-20 years	Free	Free	Free	2200	2155	2075	1895	1830
Heavy Worker	Free	Free	Free	2200	2155	2075	1895	2440
Very Heavy Worker	Free	Free	Free	3135	3075	2960	2710	4265
Cereals (2)								
All Consumers	Free	Free	Free	Free	125 ^a	230 ^a	0	10
Sugar								
Normal Consumer	Free	590	840	460	455	460	640	585
Persons 0-20 years	Free	590	840	460	455	460	640	585
Heavy Worker	Free	590	840	460	600	610	785	710
Jam, Honey								
All Consumers	Free	Free	Free	Free	Free	Free	Free	Free
Meat, Meat Prod. (3)								
Normal Consumer	Free	Free	Free	200 ^b	230	480	395	445
Children 0-3 years	Free	Free	Free	75	60	410	230	215
Children 4-6 years	Free	Free	Free	135	110	410	395	445
Persons 7-20 years	Free	Free	Free	200	230	480	395	445
Heavy Worker	Free	Free	Free	290	335	560	530	585
Very Heavy Worker	Free	Free	Free	660	760	890	1055	1145
Fats (4)								
Normal Consumer	Free	Free	Free	Free	265	270	265	255
Children 0-6 years	Free	Free	Free	Free	265	270	265	255
Children 7-12 years	Free	Free	Free	Free	335	330	335	315
Heavy Worker	Free	Free	Free	Free	335	330	335	315
Very Heavy Worker	Free	Free	Free	Free	400	395	410	375
Cheese								
All Consumers	Free	Free	Free	90	55 ^c	Free	40	70
Eggs								
All Consumers	Free	Free	Free	Free	Free	Free	Free	90
Coffee (5)								
Adult Consumer	Free	100	95	75	70	45	35	40
Heavy Worker	Free	150	145	115	105	70	55	65

^a Oatmeal in this period included in the bread ration in exchange for bread or flour.

^b Rice in this period included in the bread ration in exchange for bread or flour.

^c Meat ration included pork only for the period October 6, 1940—March 31, 1941. Other meats free.

^d Mutton and goatmeat were unrationed February 21—October 18, 1944.

1942				1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
1550	1515	1540	1550	1515	1530	1505	1615	1550	1615	1625	1625	1625	1560	1515
1165	1140	1225	1165	1140	1150	1125	1215	1165	1210	1220	1220	1220	1170	1140
1550	1515	1540	1550	1515	1530	1505	1615	1550	1615	1625	1625	1625	1560	1300
1745	1705	1840	1940	1895	1915	1880	2020	1940	2020	2030	2030	2030	1950	1895
2325	2275	1925	1940	1895	1915	1880	2020	1940	2020	2030	2030	2030	1950	1895
4075	3980	3465	3875	3795	3830	3760	4045	3880	4040	4060	4060	4060	3900	3790
50	50	30	105	240	240	235	225	230	230	220	140	190	135	95
425	445	700	605	425	435	670	515	420	385	765	420	395	395	565
425	445	700	605	425	435	670	515	420	385	765	420	395	395	370
565	590	840	820	640	650	870	695	630	585	895	555	590	585	460
Free	Free	Free	Free	Free	Free	Free								
395	235	175	210	210	435	440	405	400 ^a	705 ^a	530 ^a	330	285	300	340
200	135	75	105	100	240	240	190	210	370	325	170	165	115	175
395	235	175	210	210	435	440	405	400	705	530	330	285	300	340
395	235	175	210	210	435	440	405	400	705	530	330	285	300	340
550	295	225	275	275	575	620	520	495	835	680	435	400	385	435
1180	545	405	480	475	995	1160	855	785	1235	1120	740	755	645	1000
255	250	255	270	250	250	250	265	305	320	325	310	285	250	250
255	250	255	270	250	250	250	265	305	320	325	310	285	250	250
315	310	320	330	310	310	310	325	365	380	385	375	345	310	310
315	310	320	330	310	310	310	325	365	380	385	375	345	310	310
375	375	445	460	440	440	440	450	490	550	575	555	535	500	500
30	30	30	35	30	30	40	70	60	55	80	70	40	65	100 ^b
75	85	80	40	45	100	45	35	100	140	95	45	130	120	135
25	15	20	35	25	20	25	60	50	55	65	75	65	45	75 ^b
55	25	30	45	50	40	40	80	70	70	85	90	80	55	85

^aSausage and similar products unrationed, May 2—August 29, 1944.

^bCanned pork and meat unrationed, June 12—August 29, 1944.

^cCheese unrationed, February 1—June 30, 1942.

^dNursing and expectant mothers received 370 grammes sugar, 435 grammes cheese and 50 grammes coffee.

SWITZERLAND

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Bread and Flour (1)								
Normal Consumer Alternative A)	Free							
" " " " B)	Free							
Children	Free							
Heavy Worker	Free							
Very Heavy Worker	Free							
Cereals (2)								
Normal Consumer Alternative A)	620	385	175	175	330	235	115	115
" " " " B)	r.	r.	r.	115	115	115	90	225
Children	r.							
Heavy Worker	r.							
Very Heavy Worker	r.							
Sugar (3)								
Normal Consumer	465	385	235	235	175	175	175	175
Children	465	385	235	235	175	175	175	175
Jam, Honey								
All Consumers	Free							
Meat, Meat Products (4)								
Normal Consumer Alternative A)								
" " " " B)								
Children								
Heavy Worker								
Very Heavy Worker								
Fats (5)								
Normal Consumer	215	95	75	150	185	165	150	165
Children	r.							
Heavy Worker	r.							
Very Heavy Worker	r.							
Liquid Milk								
Normal Consumer Alternative A)								
" " " " B)								
Children								
Heavy Worker								
Very Heavy Worker								
Cheese								
Normal Consumer Alternative A)								95
" " " " B)								r.
Children								r.
Heavy Worker								r.
Very Heavy Worker								r.
Eggs (pieces)								
Normal Consumer								
Coffee (6)								
All Consumers								40 35

1 Extra rations of sugar for home preserving, occasionally.

2 Plus additional ration of powdered egg.

SWITZERLAND

1942				1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
Free	Free	Free	1465	1700	1715	1755	1755	1710	1855	1875	1700	1525	1395	1
				r.	r.	2105	2105	2070	2205	2230	2070	1840	1605	1
Free	Free	Free	990	1290	1290	1290	1290	1075	1130	1130	1045	r.	815	1
Free	Free	Free	2975	2275	r.	2455	2455	r.	r.	r.	r.	2925	2795	2
Free	Free	Free	r.	2975	r.	3155	3155	r.	r.	r.	r.	3625	3495	2
195	200	150	165	135	170	115	215	410	360	270	215	{220	280	
310	385	355	370	280	320	330	320	490	490	490	440	{220	280	
r.	r.	r.	r.	r.	r.	r.	r.	r.	r.	r.	r.	1000	1060	
r.	r.	r.	r.	r.	r.	r.	r.	r.	r.	r.	r.	1385	1445	
140	140	115	115	115	115	115	115	115	115	115	115	115	115	
175	175	175	175	175	175	175	175	175	175	175	175	175	175	
Free	Free	Free	85	95	60	60	60	155	60	0	60	25	25	
610	460	210	390	355	400	580	460	355	255	320	335	265	320	
				r.	r.	230	50	30	55	85	r.	r.	85	
180	140	95	115	115	115	180	140	140	120	110	115	r.	95	
r.	820	410	550	r.	r.	r.	480	565	r.	r.	r.	400	455	
r.	r.	r.	550	r.	r.	r.	r.	r.	r.	r.	r.	475	530	
200	225	220	195	185	140	105	130	145	135	115	145	150	115	
140	155	135	135	130	115	115	125	160	145	140	145	r.	115	
r.	275	275	230	r.	r.	r.	165	165	r.	r.	r.	265	230	
r.	r.	r.	230	r.	r.	r.	225	225	r.	r.	r.	325	290	
l. r.	l. r.	l. r.	2050	2840	3650	{ 3190	2905	2905	2560	2560	2560	2560	2560	2
						3955	3650	3650	4140	3025	3025	3025	3025	3
l. r.	l. r.	l. r.	3300	5000	5235	5745	5045	5000	4885	4885	4885	4885	4885	4
l. r.	l. r.	l. r.	r.	7000	7000	3725	3605	r.	r.	r.	r.	3260	3260	3
l. r.	l. r.	l. r.	r.	r.	r.	r.	3605	r.	r.	r.	r.	3260	3260	3
95	95	150	125	95	155	{ 125	90	80	65	60	60	75	80	
						185	60	175	115	90	100	125	115	
45	45	70	60	35	35	65	60	50	45	35	35	r.	40	
225	225	225	r.	115	r.	120	75	r.	r.	r.	r.	145	130	
r.	r.	r.	r.	r.	r.	145	95	r.	r.	r.	r.	170	165	
0.5*	l. r.	0.5*	0.5	1	1	1	0.5	0.5	1	0.5	0.5	r.	r.	
35	35	35	45	50	50	40	45	45	40	35	35	35	r.	

THE UNITED KINGDOM

Consumer Category	1940				1941			
	I	II	III	IV	I	II	III	IV
Sugar¹ All Consumers	340	340	225	225	225	225	225	225
Jam, Honey All Consumers	Free	Free	Free	Free	Free	55	115	115
Meat, Meat Prod.² (4) Normal Consumer Children under 6 years	1/10 /11	1/10 /11	1/10 /11	2/2 1/1	1/2 /7	1/0 /6	1/2 /7	1/2 /7
Bacon and Ham All Consumers	115	225	115	115	115	115	115	115
Fats³ All Consumers	115	225	225	225	225	225	225	225
Liquid Milk³ Normal Consumer	Free	Free	Free	Free	Free	Free	Free	Free
Children under 6 years	Free	Free	Free	Free	Free	Free	Free	Free
Children 6-17 years	Free	Free	Free	Free	Free	Free	Free	Free
Cheese Normal Consumer	Free	Free	Free	Free	Free	30	55	85
Eggs All Consumers ⁴	r.	r.	r.	r.	r.	r.	r.	r.
Tea All Consumers	Free	Free	55	55	55	55	55	55

¹ From November 1943 to April 1945, sugar and preserves rations often exchangeable at about one pound of sugar for one pound of preserves.

² Meat and meat products, except for bacon and ham, are rationed on a value basis. Expressed in terms of shillings and pence.

THE UNITED KINGDOM

1942				1943				1944				1945		
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
225	225	225	225	225	225	225	225	225	225	225	225	225	225	225
115	115	115	115	115	115	115	115	115	225	115	115	115	115	115
1/2 /7														
115	115	115	115	115	115	115	115	115	115	170	115	115	115	85
225	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Free	1420	1135-	1135-	1135-	1135-	1135-	1135-	1135-	1135-	1135-	1135-	1135-	1135-	1135-
	2270	2270	2270	2270	2270	2270	2270	2270	2270	2270	2270	2270	2270	2270
Free	3980	3980	3980	3980	3980	3980	3980	3980	3980	3980	3980	3980	3980	3980
Free	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990
85	85	115	115	225	115	155	155	85	85	85	55	85	85	85
r.														
55	55	55	55	55	55	55	55	55	55	55	55	55	55	55

¹ For non-priority consumers, the quantity of the ration varies according to the supply situation in various seasons of the year.

² Shell eggs primarily reserved for expectant mothers and children; however, allocations are made from time to time, providing one egg per ordinary consumer. In 1942 there were 29 and in 1943 and 1944 there were 30 allocations.

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